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Volume 54 AUGUST 1961 Number 8

the Journal

OF THE OKLAHOMA STATE MEDICAL ASSOCIATION

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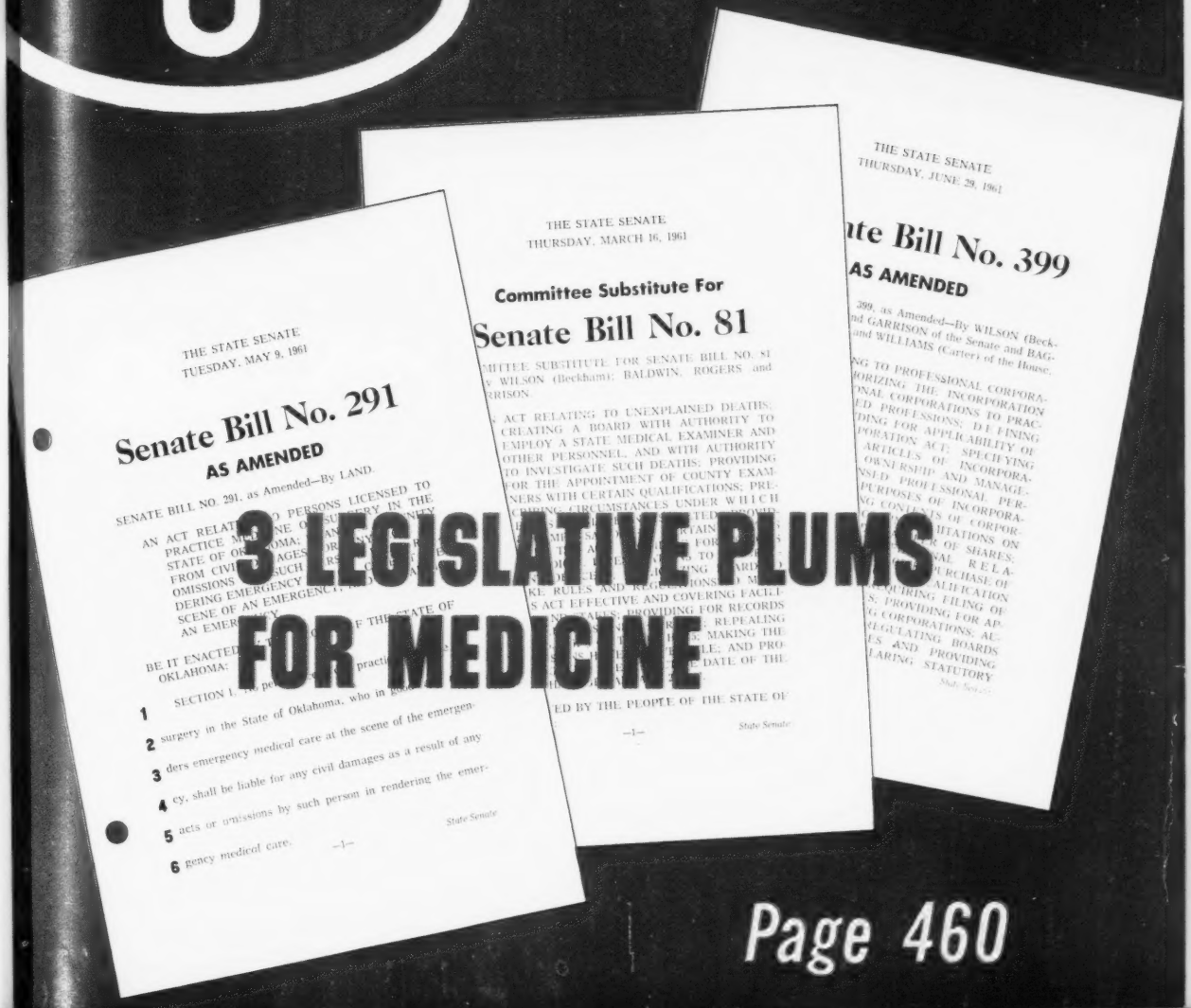


THE STATE SENATE
TUESDAY, MAY 9, 1961

Senate Bill No. 291

AS AMENDED

SENATE BILL NO. 291, as Amended—By LAND.

AN ACT RELAT... PERSONS LICENSED TO PRACTICE ME... SURGERY IN THE STATE OF OK... FROM CIVI... SUCH OMISSIONS... DERING EMERGENCY... SCENE OF AN EMERGENCY... AN EMER...

BE IT ENACTED ... OF THE STATE OF OKLAHOMA:

SECTION 1. ... practi...

surgery in the State of Oklahoma, who in good ... emergency medical care at the scene of the emergency shall be liable for any civil damages as a result of any acts or omissions by such person in rendering the emergency medical care.

State Senate

—1—

THE STATE SENATE
THURSDAY, MARCH 16, 1961

Committee Substitute For

Senate Bill No. 81

...MITTEE SUBSTITUTE FOR SENATE BILL NO. 81 ...Y WILSON (Beckham); BALDWIN, ROGERS and ...RRISON

... ACT RELATING TO UNEXPLAINED DEATHS; CREATING A BOARD WITH AUTHORITY TO EMPLOY A STATE MEDICAL EXAMINER AND OTHER PERSONNEL, AND WITH AUTHORITY TO INVESTIGATE SUCH DEATHS; PROVIDING FOR THE APPOINTMENT OF COUNTY EXAMINERS WITH CERTAIN QUALIFICATIONS; PRE... CIRCUMSTANCES UNDER WHICH ... RULES AND REGULATIONS ... ACT EFFECTIVE AND COVERING FACILITIES, PROVIDING FOR RECORDS ... REPEALING ... MAKING THE ... AND PRO... DATE OF THE ...

...ED BY THE PEOPLE OF THE STATE OF ...

State Senate

—1—

THE STATE SENATE
THURSDAY, JUNE 29, 1961

...te Bill No. 399

AS AMENDED

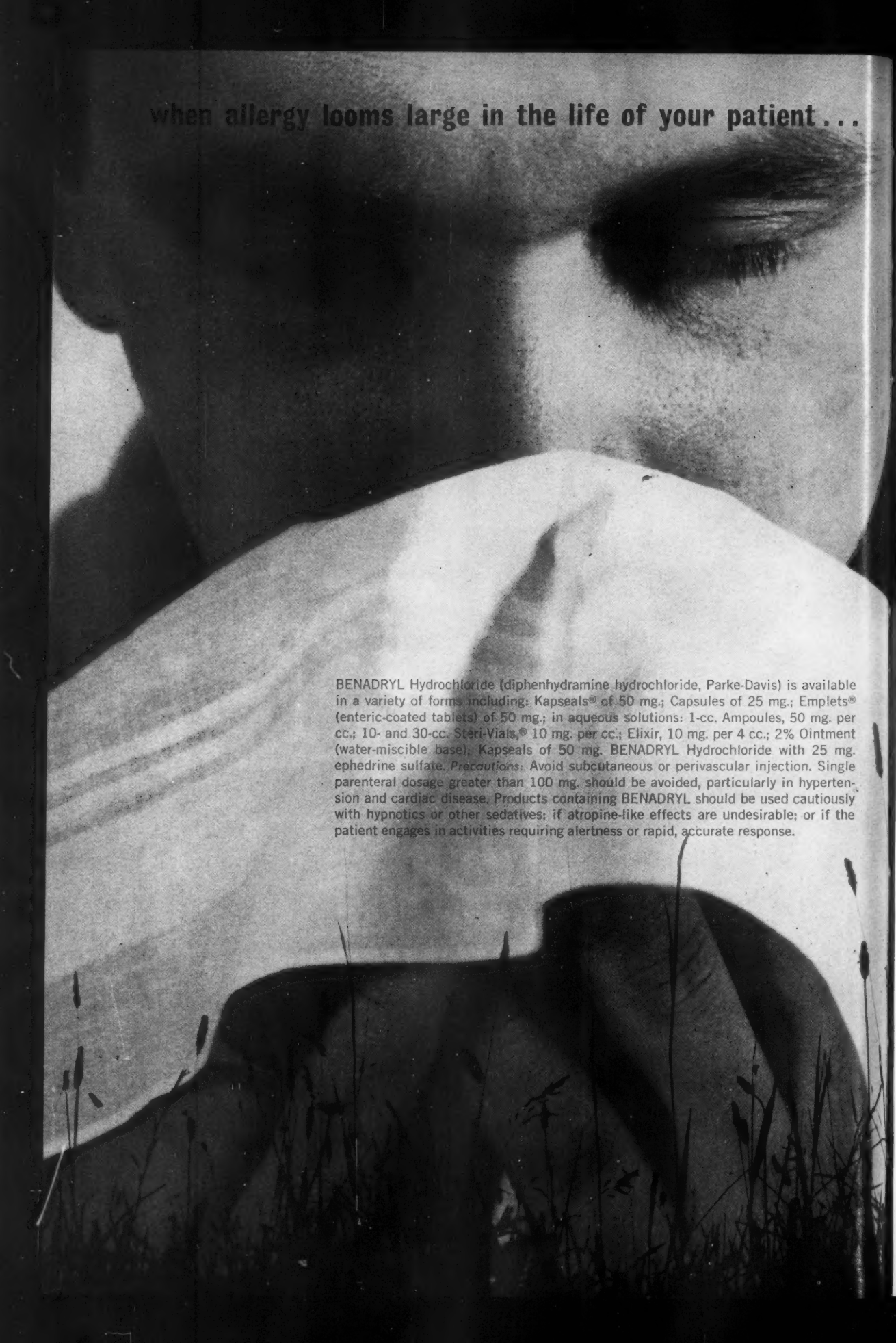
...399, as Amended—By WILSON (Beck... ...nd GARRISON of the Senate and BAG... ...and WILLIAMS (Carter) of the House.

...NG TO PROFESSIONAL CORPORA... ...HORIZING THE INCORPORATION ...ONAL CORPORATIONS TO PRAC... ...ED PROFESSIONS; DEFINING ...DING FOR APPLICABILITY OF ...PORATION ACT; SPECIFYING ...ARTICLES OF INCORPORA... ...OWNERSHIP AND MANAGE... ...NSED PROFESSIONAL PER... ...PURPOSES OF INCORPORA... ...NG CONTENTS OF CORPOR... ...LIMITATIONS ON ...R OF SHARES; ...AL RELEA... ...PURCHASE OF ...QUIRING; FILING OF ...S; PROVIDING FOR AP... ...G CORPORATIONS; AU... ...REGULATING BOARDS ...ES AND PROVIDING ...LARING STATUTORY

State Senate

3 LEGISLATIVE PLUMS FOR MEDICINE

Page 460



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Editorials

Federal Regulation of Animal Experimentation

Two proposals to regulate animal experimentation are before Congress; one by Representative Martha Griffiths of Michigan (HR 1937) and the other by Representative Morgan Moulder of Missouri (HR 3556). They are being considered by the Committee on Interstate and Foreign Commerce—House of Representatives of which Oklahoma's John Jarman is a member.

H.R. 3556—A Bill

To provide for humane treatment of animals used in experiment and research by recipients of grants from the United States, and by agencies and instrumentalities of the United States, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it is declared to be the policy of the United States that animals used in experiments, tests, the teaching of scientific methods and techniques, and the production of medical and pharmaceutical materials, shall be spared avoidable pain, stress, discomfort and fear, that they shall be used only when no other feasible and satisfactory method can be used to obtain necessary scientific information for the cure of disease, alleviation of suffering, prolongation of life, or for military requirements, that the number of animals used for these purposes shall be reduced as far as possible, and that all animals so used shall be comfortably housed, well fed, and humanely treated.

SEC. 6. From and after January 1, 1962, no grant of money for research, experimentation, testing, or training in scientifc procedures or techniques, or the production of medical or pharmaceutical material, and no advance or payment under any such grant, shall be made by or through any agency or instrumentality of the United States, or by or through any person or agency pursuant to contract or authorization of the United States Government, to any laboratory or person using animals in research, experiments, tests, or training in scientific procedures and techniques, unless the laboratory or person applying for or receiving the grant has a certificate of compliance with this Act, issued by the Commissioner for Laboratory Animal Control.

This statement of purpose of the bill is a formidable bit of serious tom-foolishness. It is formidable because of the proposed set-up for Federal control. It is serious because the author is serious and means every word of it. It is a bit of Congressional tom-foolishness because it is taking advantage of the presumably nicer conscience and greater humanitarianism of the legislator to legislate the same for the scentist. How naive can one be? Without them, no legislation can produce them or replace them with controls and with them no legislation is necessary. The entire education and training of the scientist in America should develop in him a type of humility that spawns abhorence of cruelty and waste.

It probably would make no sense to the advocates of such legislation to inform them that the scientist would not accept as valid data obtained from experimental animals who were malnourished, filthy, sick, poorly housed and generally poorly cared for. This is just a little added protection for the animal in case the scientist is lacking the humility of the lawmaker. But I have never seen either an investigator or his technical helpers in an experimental laboratory be deliberately cruel in the handling or treatment of animals.

One little item in the bill that is worthy of note. The control is to be money, Federal money. You play ball with us and do as we say or no grants of money. Where does most of the grant money come from? From the National Institutes of Health. Who says the Federal Government can't control what it puts money into? This is an open declaration of intent by the author of the bill to see to it that the Federal Government does control not by law but by money.

Remember—John Jarman is our representative on the Committee.

New Medical Examiner's Law

The legislature has finally taken the investigation of unexplained deaths in the state of Oklahoma out of the horse and buggy days with the passage of Senate Bill No. 81. The bill, written by Senator Charles Wilson of Sayre and actively supported by the Oklahoma State Medical Association and various law enforcement groups, provides for the establishment of a medical examiner's system. The old law, copied after a North Dakota statute and in effect since 1907, provided only two legal methods of obtaining permission for autopsies. The most frequent approach was to try to obtain specific permission from the nearest of kin. Upon the refusal of the nearest of kin, permission could then only be obtained through a coroners (justice of the peace) court. In cases of suspected homicide, neither method was satisfactory.

Senate Bill 81 establishes a board for unexplained deaths with powers to hire a State Medical Examiner. The State Medical Examiner must be a doctor of medicine with special training in pathology. He is empowered to appoint County Medical Examiners who will investigate unexplained and suspicious deaths at the request of local law enforcement officers. The County Medical Examiner will then make recommendations as to whether or not an autopsy is indicated in such cases. In event an autopsy seems indicated, permission will be obtained in the following fashion:

A. From the deceased during his lifetime, or

B. From the surviving spouse of the deceased, or

C. If the surviving spouse is incompetent or not within the county or adjoining county, or if there is no surviving spouse, then from an adult child, parent, brother or sister of the deceased, or

D. If the deceased has no known spouse, adult child, parent, brother or sister within the state, then from the County Attorney.

If the consent in writing is refused, or cannot be obtained within a reasonable time, the County Medical Examiner or his designated deputy or the County Attorney where the death occurred may make application in writing to the District Court. In the absence of the district judge from the county or his unavailability, the County Court shall forthwith consider the application and issue its order for an autopsy or denial of the application, which decision of the court shall be final.

Until such time as the legislature shall make appropriations available, the State Medical Examiner and any depute state medical examiner shall be appointed from qualified instructors or other personnel from the School of Medicine at the University of Oklahoma, and their compensation and expenses shall be provided from the appropriations made available to the Medical School. The present legislature provided no funds for the implementation of this bill.

The bill was amended in the House and the amendment subsequently approved by the Senate to the effect that any information obtained through such investigation as described under the bill cannot be used in civil cases.

People of the state of Oklahoma should be grateful to Senator Wilson and other enlightened legislators who worked very diligently for the passage of this act.—*H.T.R.*

C. B. Dawson Joins Editorial Board

C. B. Dawson, M.D., Oklahoma City urologist, was recently appointed to the Board of Editors of the *Journal* of the OSMA.

After receiving his Bachelor of Science degree from Oklahoma State University in Stillwater, Doctor Dawson graduated from the University of Oklahoma School of Medicine where he is now Associate Professor of Urology. His internship at Augustana Hospital in Chicago was followed by two-years active duty with the U.S. Navy in the Pacific.

Subsequent to his release from active duty, he served a residency in urology at the University Hospitals in Oklahoma City.

He is a Diplomate of the American Board of Urology and a Fellow of the American College of Surgeons.

Doctor Dawson is Editor of the *Bulletin* of the Oklahoma County Medical Society, a member of the American Urological Association and the South Central Section of the American Urological Association.

PRESIDENT'S LETTER

A visit to the AMA's House of Delegates meeting is a rewarding experience. It's gratifying to witness the sincerity of the physicians who comprise this policy-making body, as they labor endless hours over the myriad of complex problems confronting them.

Our own delegation is exemplary; worthy of our appreciation and support!

Delegates Hoover and Phelps bore the brunt of the work, receiving able assistance from Alternates Duer and Points. Other assists were provided by President-Elect Carlock, OSMA Vice-Speaker Hodgson, Doctor John F. Burton, a member of the AMA's Council on Medical Service and Doctor Wendell L. Smith, President of the Tulsa County Medical Society.

Two of the above were singularly honored during the meeting. Doctor Burton was named Chairman of the Council on Medical Service, automatically making him a member of the House of Delegates, and Doctor Phelps was elected President of the Aces and Deuces, a fraternal organization of states with one or two delegates.

Oklahoma's voice in the AMA grows continually stronger—through the efforts of the present delegation to continue the dedicated pattern of those who went before.

Our thin ranks do not permit us to thoroughly cover the many Reference Committee activities, however, and volunteers for this interesting task would be most heartily welcomed.

* * * * *

By the time you read this, H.R. 4222 may have been passed or (we hope) postponed. Please remember it is not likely to be abandoned.

Only through concerted and continuing action may we hope to forestall a dangerous precedent in the provision of health care.

Clinton Gallaher M. D.
President

Scientific Articles

Preliminary Report on Trial of *l*-Alpha-Methyl Dopa (Aldomet®) in the Treatment of Hypertension*

R. W. PAYNE, M.D. J. H. CLOSE***
T. L. WHITSETT*** J. G. GOGERTY, Ph.D.

ALPHA-METHYL DOPA, an analogue of 3,4-dihydroxyphenylalanine (DOPA), has been shown to inhibit the decarboxylation of DOPA and 5-hydroxytryptophane, with resultant depression of the formation of norepinephrine and 5-hydroxytryptamine (serotonin).[1,2] An antihypertensive effect of the d,1 mixture of this agent has been described in man by Oates, Gillespie, Udenfriend and Sjoerdsma.[3,4]

While the clinical effectiveness of alpha-methyl dopa in the treatment of hypertension has not been specifically demonstrated to result from inhibition of pressor amine formation, such serves as the most attractive explanation of its antihypertensive action. The present report is concerned with the clinical response to the levorotatory form of alpha-methyl dopa (Aldomet®)** (figure 1) in the treatment of hypertension.

Methods

Patients with hypertension classified as malignant or essential were studied at the Oklahoma County Farm Hospital and the out-patient clinic of the University Hospital. After stabilization of blood pressure without antihypertensive medication, *l*-alpha-methyl dopa was administered in divided daily doses. Blood pressure and pulse were recorded in the standing, sitting and supine positions at frequent intervals during the day until consistent readings were obtained; then daily recordings were taken 3½-4 hours after the noon dose of the drug. For purposes of the present report average sitting blood pressure determinations at the beginning of treatment are compared with those obtained after six weeks of therapy.

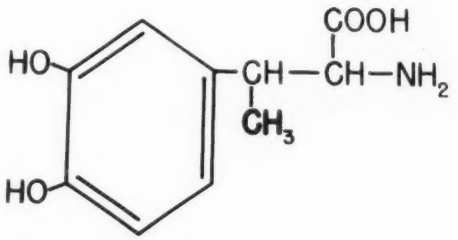

Figure 1

*From the Departments of Pharmacology and Medicine, University of Oklahoma School of Medicine.
**Supplied by Doctor Edmund DeMaar, Merck Sharp & Dohme Research Laboratories, West Point, Pennsylvania.
***Senior Medical Student.

Pt.	Age/Sex/Race	Av. Initial B.P. (Sitting)	Final Daily Dose Aldomet (Gm.)	Duration Rx	Av. Stabilized B.P. (Sitting)	Comments
H.G.	52/M/W	170/112	1.0	4 months	130/90	
M.R.	40/F/W	178/110	0.75	3 months	126/84	
W.E.	46/F/W	240/170	1.0	3 months	150/100	
H.B.	48/M/W	220/140	1.5*	4 months	130/80	
J.O.	40/M/W	180/120	1.0	4 months	140/90	
S.B.	63/F/W	190/115	1.0	5 months	120/70	
C.J.	31/M/W	200/120	1.5*	5 months	132/90	
W.W.	70/M/W	218/140	2.5*	5 months	130/90	Malignant Hypertension.
R.H.	69/M/W	218/140	0.75	5 months	120/70	
A.W.	61/F/W	186/110	1.75*	5 months	108/62	Malignant Hypertension.
M.B.	73/F/W	258/128	0.75*	5 months	140/86	Malignant Hypertension.
B.D.	47/M/W	230/126	1.5	3 months	150/90	
M.C.	37/F/N	250/170	2.0	4 months	110/84	
E.W.	46/F/N	210/120	1.5	2 months	160/98	

* + Chlorothiazide, 250 mg., B.I.D.

TABLE 1
Response of Individual Hypertensives to L-Alpha-Methyl Dopa

Results

Fourteen hypertensive patients treated with *l*-alpha-methyl dopa are included in the present study, six of whom have received the drug for periods of five months. Satisfactory lowering of blood pressure has been maintained in all patients using total daily doses of 0.75 to 2.5 gm (table 1). All patients initially responded to 0.25 gm. of *l*-alpha-methyl dopa every six hours, though inadequate control became apparent at this dose level in six of the subjects during the first few weeks of treatment. Stabilization of blood pressure at a desirable level occurred in all subjects upon increasing dosage of the medication. Though total dosage of *l*-alpha-methyl dopa appeared of greatest importance in maintaining satisfactory lowering of blood pressure, manipulation of individual doses was occasionally advantageous in providing more consistent control of hourly blood pressure fluctuations. On a Q.I.D. schedule the range of total daily dosage required in the patients was as follows:

Total Daily Dose (gm.)	0.75	1.0	1.5	1.75	2.0	2.5
Number of Patients	2	6	2	1	2	1

Dosage schedules other than Q.I.D. are presently under study.

While all patients under treatment exhibited greater lowering of blood pressure in the standing than in the recumbent position, only two complained of symptomatic orthostatic hypotension which in both cases appeared upon arising in the morning. This discomfort was readily removed by readjustment of dosage schedule to eliminate the midnight dose. Reduction of dosage below 0.75 gm. daily or a division of dosage into a B.I.D. schedule did not maintain an adequate hypotensive effect in any of the patients.

The maximum antihypertensive effect appeared after 1-2 days of treatment. Slight bradycardia was attributed to the medication in five of the patients. When the drug was discontinued, its effects were dissipated

in 48 hours with return of blood pressure to control levels without overshoot. The patients appeared particularly cheerful and symptomatically improved.

Reduction of the total dosage was made possible in five patients by the addition of chlorothiazide 250 mg. B.I.D. to their regimen. After the first month of treatment, stable dosage levels of *l*-alpha-methyl dopa + chlorothiazide were established affording blood pressure readings consistently within acceptable limits.

Side effects to *l*-alpha-methyl dopa have not been serious (table 2.) Initial sedation occurred in five of the patients but disappeared within 48 hours. No evidence of mental depression has been observed. Mild xerostoma persisted in three subjects. Diarrhea occurred in four patients 1-4 months after beginning treatment and was controlled by reduction of dosage or treatment with an anticholinergic agent (Probanthine®, 15 mg. Q 6 hrs.). It was our impression that these patients exhibited gastroenteritis not caused by but intensified by the drug, demonstrated by the fact that as the diarrhea subsided original dosage was again well tolerated. No hepatotoxic effect of the agent has become evident and serum S-GOT and alkaline phosphatase titers have remained unchanged in all patients.

Initial Sleepiness	5*
Dry Mouth	3
Diarrhea	4
Orthostatic Hypotension	2

Side Effects to L-Alpha-Methyl Dopa
*Maximum Duration—48 hours
TABLE 2

Summary

The levorotatory isomer of alpha-methyl dopa exerts a consistent antihypertensive effect to which tolerance does not appear to develop. Blood pressure lowering effects of the agent are potentiated by chlorothiazide. Relative lack of serious side effects further recommends use of the agent.

REFERENCES

1. Sourkes, T. L.: Inhibition of Dihydroxyphenylalamine Decarboxylase by Derivatives of Phenylalanine, Arch. Biochem. and Biophys. 51: 444-456, 1954.
2. Smith, S. E.: Action of Alpha-methyl dopa on Brain and Intestinal 5-hydroxytryptamine in Mice, J. Physiol. 148: 18 p, 1959.
3. Oates, J. A., Gillespi, L., Udenfriend, S., Sjoerdsma, A.: Inhibition of Amino Acid Decarboxylation and Lowering of Blood Pressure in Man by Alpha-methyl dopa, Science 131: 1890, 1960.
4. Sjoerdsma, A.: Newer Biochemical Approaches to the Treatment of Hypertension, Ann. N. Y. Acad. of Sci. 88: 933-938, 1960.

800 N.E. 13th, Oklahoma City, Oklahoma

Postpayment Plan Launched in Tulsa

The Tulsa County Medical Society recently announced its sponsorship of an unique program for budgeting the costs of medical care. Through a cooperative arrangement between the society and Tulsa's First National Bank, Tulsa citizens with good credit ratings will now be able to borrow money on an unsecured note to pay for medical, surgical and obstetrical care.

A reserve fund to guarantee defaulted notes was raised by voluntary contributions of $20 each from participating Tulsa physicians. Regardless of whether they contributed to the reserve fund, all Tulsa physicians are eligible to participate, securing their contracts through the medical society office.

The "MD Plan," as it is called, enables patients to budget medical bills after the debt is incurred, thus offering relief to those who do not possess adequate prepayment insurance or are otherwise unable to meet financial obligations. Such loans carry an annual interest rate of 7%. Physicians receive 95% of their total charges, with the remaining 5% being plowed back into the reserve fund for defaulted notes.

The painful shoulder, like a pain in the neck, can propagate into a major disability unless effective and comprehensive physical medicine and rehabilitation therapy is prescribed.

Physical Medicine and Rehabilitation of the Painful Shoulder*

HERBERT KENT, M.D.

A graduate of the Royal College of Physicians and Surgeons, Herbert Kent, M.D., has been certified by the American Board of Physical Medicine and Rehabilitation. In addition to his private practice in Oklahoma City, he is Associate Professor of the Department of Physical Medicine and the Department of Preventive Medicine and Public Health at the University of Oklahoma School of Medicine.

Doctor Kent holds memberships in the American Congress of Preventive Medicine and Rehabilitation, the American Academy of Preventive Medicine and Rehabilitation, the British Medical Association and the President's Committee on Employment of the Physically Handicapped.

PAINFUL scapulo-humeral motion, if left untreated, can lead to a stiff shoulder—better described as a "frozen shoulder." More thought should be given to this condition for functional everyday considerations and the necessity for early recognition and prompt treatment if we are to avoid the sequelae of this disability.

Should this problem persist for an extended period, mechanisms are set up which may lead to a syndrome of events not only involving the shoulder but even the forearm and hand as well. Such neuralgic amyotrophy has been documented in extensive detail by Steinbrocker et al,[1] as the Shoulder-Hand Syndrome.

Remarkably little was published about non-specific painful shoulder joints until 1934, when Codman[2] drew strong attention to the importance of the conjoined tendon and its relationship to degenerative changes in the supraspinatus tendon itself. Since then our knowledge of the subject has improved anatomically, but treatment is still far from satisfactory.[3,4]

Diagnosis

Pain in the shoulder may result from definitive pathology: dislocations, tuberculosis, tumors, arthritis, etc. In addition, referred disturbances from the heart, lungs, gallbladder, etc., also may produce shoulder discomfort. However, there is a rather large, well-defined group in which there is shoulder pain, impaired range of motion, frequently muscle weakness, and diminution of function where radiographic evidence is not apparent. It is this syndrome group which we are concerned with at this time.

The causes of shoulder pain in this latter group generally lie in the anatomic structures involved. Diagnosis must precede treatment. A careful history, physical examination, and roentgenogram are essential. In addition, recording of joint range, muscle strength and functional activities must be made particularly to assess disability and improvement following treatment.

*Presented at the 55th Annual Meeting of the Oklahoma State Medical Association, May 7-9, 1961.

Anatomy and Kinesiology

The shoulder joint is the most mobile joint in the body. This freedom of movement is given by the relatively large head of the humerus and shallow glenoid cavity. The mobility is provided at the expense of stability. While, at first thought, one can doubt the security of this articulation, it should be remembered that powerful muscles, strong ligaments and a loose capsule give this joint unusual strength. This can be visualized by observing a pitcher in a baseball game and the tremendous forces involved in securing the joint when the baseball is thrown. These anatomical considerations are important in the evaluation and treatment of the painful shoulder.

There is a loose ligamentous capsule enveloping the shoulder joint which is supported by muscles whose tendons lie in close proximity with it. If we consider these intimately connected structures, traumatic or inflammatory processes are frequently difficult to delineate except for the gross manifestation of pain, and subsequent restriction of joint range. Above the capsule is the supraspinatus and biceps tendon, subdeltoid, and subacromial bursae; behind, the infraspinatus and teres minor. In front is the subscapularis. Below, where the capsule is to a certain extent unsupported by muscles, there is a prolongation downwards of a fold of the capsule when the limb is in the ordinary dependent position. This fold is obliterated when the arm is abducted. To a major extent, many cases of "painful shoulder" are due to fibrinous depositions and changes in this loose fold. Recently, these changes have been confirmed by improved techniques of arthrography.[5] The deposits are a common occurrence in paralytic shoulders of the hemiplegic patient. If allowed to progress, the arm abduction becomes more and more restricted and eventually develops into what is frequently described as the "frozen" shoulder.

The underlying pathology is initiated as an inflammatory process—capsulitis if you wish—in any of the structures mentioned and subsequent adherence of the synovia followed by a spread to periarticular tissues thus producing a varied type of pain. Restriction of shoulder motion occurs early and insidiously. Consequently, testing of the ranges of motion will in many cases produce diagnostic evidence of an early developing painful shoulder.

Figure 1. "Self-mobilization" of the Painful Shoulder.

Average normal joint ranges are as follows: (with the Anatomical Position considered as zero)

Extension	0- 45
Flexion	0-180
Abduction	0-180
Adduction	0
Internal Rotation	0- 90
External Rotation	0- 90

The muscles chiefly concerned in producing shoulder motion are:

Extension—latissimus dorsi, deltoid (posterior fibers), teres major

Flexion—pectoralis major, deltoid (anterior fibers)

Abduction—supraspinatus, deltoid

Adduction—pectoralis major, coracobrachialis, teres major, latissimus dorsi

Internal Rotation—subscapularis, pectoralis major, latissimus dorsi, teres major

External Rotation—infraspinatus, teres minor

Physical Medicine and Treatment

Conservative and simple measures, if employed early, can avoid the occurrence of a

"frozen" shoulder. Opinion is uniform, that putting the arm completely at rest is undesirable. However, most patients because of pain, gradually come to restrict their activity until joint range is markedly impaired. Therefore, a management program must encompass and control pain first and foremost.

Relief of Pain

Physical medicine has much to contribute to pain relief in the early stages of the disease. Hyperthermia, whether it be from radiation or inductive devices, ultrasound or the heating pad, has the basic physiologic asset of increasing skin or muscle vascularity. However, one must remember that the periarticular structures; capsule, tendon, etc., are relatively avascular. Consequently, a temperature gradient of 100-103° F. (37.7-39.4° C.) for an extended period is far superior to twenty minutes of "baking" 110-115° F. (43.3-46.2° C.). Most patients do well with the use of a heating pad on the lowest heat setting possible for several hours. "Hot packs" are most soothing and are ideal particularly when the patient is lying down. Short wave or micro-wave diathermy is especially indicated when heating is to be deep. Ultrasound has been useful in focal heating of tissue.

Hypothermia on the other hand, has particular merit in acute conditions especially when pain is extreme. Newer medical cooling devices are available just as for heat generation. One may now produce localized cold to the body. However, for home use packing with ice bags is much more cheaply accomplished although not as efficiently. Ethyl Chloride Topical spray is also a helpful means of skin cooling and reducing pain in a shoulder.

The empirical use of heat alone, although temporarily palliative, does not suffice in most cases. Mobilization of the joint is mandatory for recovery. Thermotherapy is simply a preliminary measure. It must be followed by a well prescribed therapeutic exercise program. Shortened muscle groups and spasm release should be assisted by heat to relax, and then moved passively. The simplest method to achieve this stretching can be termed "pulley therapy" for it not only elongates muscle and tendon but also improves joint range. It is important to realize that the pain is causing the loss of free movement and not the stiffness.

Improving Joint Range

Scapulo-humeral movement is essential for the rehabilitation of the painful shoulder. Two methods are to be recommended, one requires some equipment. Both methods depend upon the patient. Improving joint range cannot be expected by having another individual or therapist work *on* the patient. One can only work *with* the patient so that he understands what exercises are necessary and to be practiced many times a day.

The first method (figure 1) requires that he grasp the wrist of the affected arm with the fingers of the normal side. The forearm and arm are then raised in a forward plane upwards as far overhead as possible. The second method (figure 2) requires an overhead pully, sash rope and leather cuff or glove for the wrist and fingers.

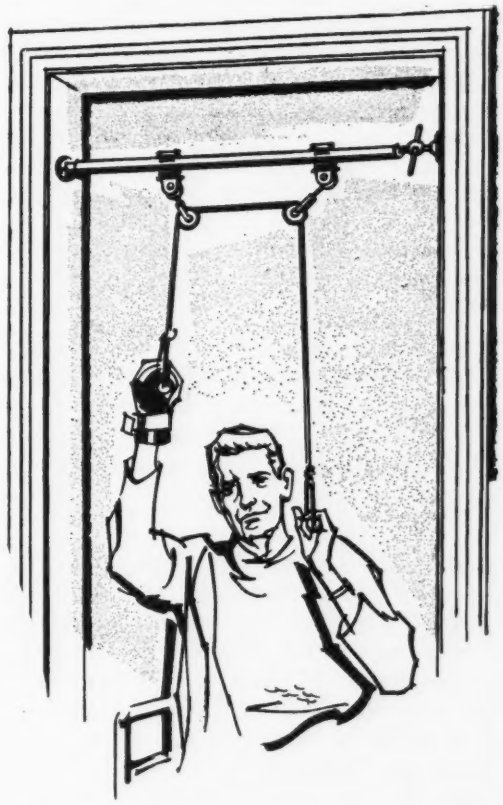

Figure 2. "Pulley-mobilization" of the Painful Shoulder.

The pulley, with a handle attached to one end of the rope, is arranged in such a fashion directly over the shoulder: to the ceiling, head of bed, doorway, so that movements of the affected arm and forearm are encouraged. If necessary, the paralyzed hand may be bandaged to the pulley rope with an Ace-bandage, special glove or leather strap. The exercise must be performed at least three times daily to alleviate shoulder joint discomfort and the prevention of a "frozen" shoulder.

Passive movements of the shoulder are useful in assisting joint range, but, the patient should be constantly urged to actively contract the shoulder musculature.

Improving Muscle Strength

Therapeutic exercises are instituted early while in bed, particularly following a "stroke." Generally, however, the chair position is best especially when a pulley and rope are employed.

Too often emphasis is placed on increasing motion in a weakened extremity with a limited range of motion, and very little or no thought to developing strength. The importance of completing joint range in all its aspects is to be emphasized. The painful shoulder atrophies insidiously through disuse. Sufficient strength can be restored in the shoulder muscles by using heavy resistance exercises. This is reflected in the load lifted and by girth measurements.

Muscle strength is attained through active or resistive exercises in which the patient performs work. The essence of such exercise is the expenditure of energy. Passive exercise, massage, or stretching will not improve motor power no matter how long this is performed.

Codman, who intensively studied this problem, suggested circumduction or "pendulum exercises," but they do not wholly suffice in many painful shoulders. A good starting position in the subacute case is to support the elbow on a table and then flex and extend the forearm through its entire range. If pain and discomfort do not occur, a pound weight is used. Gradually, over a period of days or weeks this is increased to 10 pounds. Other joint motions are then brought in: internal humeral motion and lastly external humeral rotation, the most difficult motion to rehabilitate. For the painless "frozen" shoulder, exercises should be more vigorous throughout the available joint range. A graduated therapeutic resistive exercise program is best instituted by a therapist trained in such procedures. Usually, four to six weeks are necessary to restore functional muscle strength in an affected limb.

The painful shoulder is notorious for its discouraging and sometimes prolonged response to conservative treatment. In the majority of cases, physical medicine and rehabilitation produces a more satisfactory recovery without surgical intervention.

When pain has been present for months or years, and radiates down the limb to the hand, stiffness and swelling of the hand may develop, often described as the "Shoulder-Hand Syndrome." Usually in these cases, stellate ganglion block combined with therapeutic exercises mitigates the pain and creates a more favorable and functioning shoulder.

Report of Illustrative Cases

Case 1.

A 45-year-old housewife was seen complaining of pain in the right shoulder. She stated that about six months ago she began to have rather persistent shoulder pain more noticeable at night. No history of injury or trauma could be elicited. Gradually, she found difficulty in combing her hair and fixing her bra. Her local physician recommended aspirin and local applications of heat which relieved temporarily. She noticed increasing stiffness in the shoulder and had to have assistance in putting on a coat. Finally, the pain became almost continuous.

Careful history taking failed to reveal a cause for the disability. Roentgenograms and other laboratory findings were negative for pathologic change. Examination disclosed some flattening of the shoulder contour and evidence of pain on active motion. Passive and active shoulder joint range was markedly restricted: abduction 45°; flexion 60°; extension 30°; internal humeral rotation 40°; external humeral rotation -5°.

Treatment consisted of ultrasound ther-

apy, codeine, "pulley therapy" and therapeutic exercises. Pain was brought under control within two weeks. Simple analgesics, mild heating before and following "pulley therapy" improved discomfort so that within four weeks a moderate therapeutic exercise program was underway. In two months, joint range improved. After four months, she could be discharged to a home program of therapeutic exercises to maintain joint mobility. Active joint range achieved: abduction 90°; flexion 90°; extension 45°; internal humeral rotation 60°; external humeral rotation 15°.

Case 2.

A male, aged 60, had sustained a left hemiplegia due to cerebral thrombosis. Three weeks later he commenced to have pain in the left shoulder. Because of bedrest and guarding he lost the ability to move his shoulder which became more painful.

On examination, attempted passive motion was accompanied by severe pain. Efforts to proceed with rehabilitation were resisted because of pain on body movements.

Treatment was initiated by short-wave diathermy and "pulley therapy" which he controlled himself. Gradually as pain was brought under control, joint range improved. After six weeks, thrice daily treatments, normal joint range was achieved. Exercises to improve muscle strength in the shoulder girdle musculature were begun. Within three months, he became ambulatory and was able to perform flexion movements of fingers. Pain in the shoulder had disappeared.

Comment

Disabling shoulder pain is well recognized to respond to many medicaments, anti-inflammatory agents, local anesthetics, x-ray, needling and various surgical procedures. Since statistics are unacceptable as to the preferred method of treatment, a plea is made for more conservative therapy. Physical remedies should be intelligently and comprehensively applied by physicians, particularly therapeutic exercises. More vigorous measures frequently encourages the prolongation of the inflammatory process and the symptoms persist for many months. Mobilization under anesthesia is to be deprecated. When pain has ceased, progressive mobilization will allow maximum shoulder recovery.

Summary

The painful shoulder not only is notorious for its delayed and apparent discouraging response to treatment, it can be generally stated that recovery is slow. However, if attention is paid to relief of pain, improvement of joint range and muscle strength, it will be found that equally as good results are possible when compared to other methods in management of the painful shoulder. Two case reports are presented illustrative of the results available through physical medicine and rehabilitation.

REFERENCES

1. Steinbrocker, O.; Spitzer, N.; and Freeman, H. H.: The Shoulder-Hand Syndrome in Reflex Dystrophy of The Upper Extremity, Annuals of Internal Medicine, 29: 22-52 (July) 1948.

2. Codman, E. A.: The Shoulder, T. Todd Company, Boston, Mass., 1934.

3. Hitchcock, H. H.; Bechtol, C. O.: Painful Shoulder, The Journal of Bone and Joint Surgery, 30: 1-11 (April) 1948.

4. Ghormley, R. K.: The Painful Shoulder, Postgraduate Medicine,, 2: 1-9 (July) 1947.

5. Samilson, R. L.; Raphael, R. L.; Post, L.; Noonan, C.; Siris, E.; Raney, F. L.: Shoulder Arthrography, Journal of the American Medical Association, 175: 773-778 (March) 1961.

Pasteur Medical Building, 1111 North Lee, Oklahoma City, Oklahoma

Open Heart Surgery in A Private Hospital: Clinical Experience with 127 Cases*

John M. Carey, M.D. **David Kraft, M.D.**
Nazih Zuhdi, M.D. **W. T. McCollum, M.D.**
John Donnell, M.D. **Galen Robbins, M.D.**
Gerald Honick, M.D. **Allen Greer, M.D.**

THE EXTENSION of open heart surgery beyond large medical centers has been limited in part by the absence of a simple, effective and inexpensive perfusion system. The technical problems of cardiac surgery are not in themselves prohibitive.[1] Over the past few years, we have developed a perfusion system which has provided a practicable and superior solution to the cardiopulmonary by-pass problem.

Method

The oxygenating perfusion apparatus consists of modifications of and additions to the basic bubble oxygenator of DeWall. Venous drainage is accomplished by catheters threaded into the venae cavae and gravity drainage is used for input of venous and cardiotomy suction return blood[2] into the vertical oxygenating tube (figure 1), and is mixed with 100% oxygen regulated at a flow that permits a slowly rising column of bubbles. The initial "debubbling" is done in a stainless steel canister filled with stainless steel mesh sprayed with Dow-Corning antifoam A. Incorporation of a filter into the oxygenator has decreased the post-helical volume by a least 130 cc. The blood enters the double helical system which acts as a reservoir, a buddle separator and heat exchanger.[3,4,5,6] The blood is then returned through a single pump head at a precalculated systemic perfusion flow. Cooling or warming of the blood is achieved by pumping cold or warm water countercurrently through the inner stainless steel helix.

The three basic features of our perfusion system are moderate internal hypothermia, low perfusion rate, and hemodilution.[1,12]

Internal Hypothermia

The advantages of internal hypothermia in extracorporeal circulation for cardiopul-

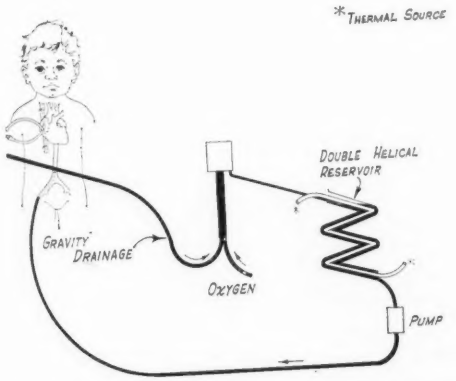

Figure 1. Open Heart Surgery—Schematic diagram showing simplified circuit and essentials of perfusion system.

*From the Cardiovascular Section, Mercy Hospital, Oklahoma City, Oklahoma.
Supported by private donations.
This paper was presented at the Fifty-Fifth Annual Meeting of the Oklahoma State Medical Association, May 9, 1961.

monary by-pass have been recorded by Gollan,[7] Sealy and co-workers,[8] and Zuhdi and associates.[9] Essentially, internal hypothermia permits a safe reduction of metabolic and oxygen requirements, unassociated with the limitations of external hypothermia or perfusion alone. The mid-intraesophageal temperature is decreased at a rate of 0.4C to 3C per minute to the desired level which varies at present between 25C to 30 C. The venae cavae are occluded for total cardiopulmonary by-pass just prior to aortic occlusion and reparative surgery. Simple aortic occlusion for periods of 15 to 25 minutes at a time during hypothermia allows an empty heart and helps prevent air embolism.[10] Rewarming takes somewhat longer, but this extra supportive partial by-pass is felt to be beneficial.

Low Flow Rates

A low flow rate of 20 cc per kg body weight per minute is used. The ratio of reservoir volume to flow per minute is 0.8. The clinical response and survival are at present the best criteria, though retrospective, for successful total body perfusion.[11] Through electroencephalographic data and oxygen saturation of the peripheral blood continuously monitored during the perfusion, and though studies on oxygen consumption, metabolic acidosis, and through other physiologic data we have concluded that 20 cc per kg body weight per minute maintains the vital functions at adequate levels. Immediate awakening and the clinical response indicate the safety of these low flow rates at an intraesophageal temperature of 25C to 30C.

Hemodilution

The simplification of the perfusion system and great reduction of extracorporeal volume predestined the introduction of the 5% dextrose in water for definitive priming of the extracorporeal circuit. After experimental analysis and evaluation, we have employed the dextrose in water primed machine in 83 patients. The extracorporeal priming volume is equal to the estimated eight hour fluid requirement of the patient, as determined by the formula $\frac{\text{wt in kg} \times 2 \times 24}{3}$.

EXPERIENCE WITH BLOOD PRIMED HEART-LUNG MACHINE

Defect	Cases	Mortality
I.A.D.	10	0
I.V.D.	11	1
P.S.	7	0
Tetralogy	7	2
M.S. & M.I.	5	0
Single Ventricle	1	1
Reverse P.D.A., V.S.D.	1	1
A.S., C.B.A.	2	0
	44	5

Table 1. Open Heart Surgery—Clinical experience with blood primed heart-lung machine.

The priming volume of 5% dextrose in water is pumped into the patient bringing about slight hemodilution.[12, 13] This fluid remains in circulation during the period of cardiopulmonary by-pass. Most of this hemodiluting solution disappears rapidly from the circulation during the first hour following perfusion. At the end of perfusion, contents of the system are pumped into the patient, restoring red cell mass. Replacement of the blood usually lost from the surgical field is done with banked citrated blood.[14]

Results

Until the time of this writing, we have used the double helical reservoir heart-lung machine in 127 patients undergoing open heart surgery. Forty-four of these in the early part of the experience were carried out with a blood primed extracorporeal circuit (table 1). We have used the dextrose in water primed machine in 83 patients, representing nearly the complete range of surgically correctable acquired and congenital cardiac defects (table 2). There was an equal number of adults (64) and children (63). Among the children, there were 17 infants aged three or under who had open heart surgery. While most of the adults had acquired disease, 26 were operated upon for congenital defects. Age bore no relationship to operative problems, or to postoperative morbidity or mortality. There were 35 consecutive survivals.

The adequacy of our perfusion system has been demonstrated, even when dealing with the lengthy repair of complicated defects.

EXPERIENCE WITH 5% D/W PRIMED HEART-LUNG MACHINE

Defect	Cases	Mortality
Mitral Stenosis	27	1
I.A.D.	14	0
I.V.D.	18	2
A.S. & S.A.S. (congenital)	7	0
P.S.	6	0
Mitral Insufficiency	3	2
A.S. (acquired)	3	3
A.V. Communis	1	1
Complete Transposition	1	1
Total Anom. P. Drain	1	0
Myocarditis	1	1
T.O.F. with shunt	1	1
	83	12

Table 2. Open Heart Surgery—Clinical experience with 5% dextrose in water primed heart-lung machine.

There have been no "perfusion deaths." There has been no evidence of bleeding or other hemorrhagic tendency.[1] There is adequate peripheral oxygenation and active electroencephalogram and urinary output during hypothermic total body cardiopulmonary by-pass. The immediate clinical response has been prompt and gratifying.

Consistent results are obtained. There have been no deaths in the group with atrial septal or uncomplicated ventricular septal defects, pulmonary stenosis, or congenital aortic stenosis. Morbidity and mortality appeared in the most severe acquired mitral and aortic valvular lesions or in the severe, virtually hopeless congenital cardiac problems.

Summary

The use of a simple small volume oxygenator at low flow rates, combining internal hypothermia and priming 5% dextrose in water most nearly meets the requirements of an ideal oxygenator. The details of this system and clinical results are described. Open heart surgery is brought within the scope of most community hospitals.

Addendum

Since the submission of this paper, an additional 17 patients have been operated on using the dextrose in water primed machine. This makes a total of 110 patients on whom this method has been employed.

BIBLIOGRAPHY

1. Zuhdi, N., McCollough, B., Carey, J., Krieger, C., and Greer, A.: Hypothermic perfusion for open-heart surgical procedures—Report on the use of a heart-lung machine primed with 5% dextrose in water inducing hemodilution, J. International Coll. of Surg., 35: 319-326, 1961.
2. Zuhdi, N., Kimmell, G., Carey, J., and Greer, A.: Vacuum regulator for cardiotomy return and chest drainage systems, J. Thor. and Cardiovascular Surg. 39: 221-224, 1960.
3. Zuhdi, N., McCollough, B., Carey, J., and Greer, A.: Hypothermic total body cardiopulmonary by-pass, experimental and clinical studies, J. Oklahoma M.A., 53: 514-516, July 1960.
4. Greer, A., Carey, J., and Zuhdi, N.: Hypothermic circulation with a temperature regulating pump oxygenator, Am. Surg. 26, 446-450, 1960.
5. Zuhdi, N., Kimmell, G., Montroy, J., Carey, J., and Greer, A.: A system for hypothermic perfusion, J. Thor. Surg., 39: 629-633, 1960.
6. Zuhdi, N., McCollough, B., Craig, N., Kimmell, G., Carey, J., and Greer, A.: Apparatus for hypothermic perfusion, The American Surgeon, 26: 1960.
7. Gollan, F.: Discussion on physiology of perfusion, in Garrot, A. J.: Extracorporeal circulation, Springfield, Ill., Charles C. Thomas, Publisher, 1958, pp. 212-220.
8. Sealy, W. C., Brown, I. W., Jr., Young, W. G., Smith, W. W. and Lesage, A. M.: Hypothermia and extracorporeal circulation for open heart surgery. Its simplification with a heat exchanger for rapid cooling and rewarming, Ann. Surg., 150: 627, 1959.
9. Zuhdi, N., Greer, A., Kimmell, G., Montroy, J., Redmond, R., Donnell, J., Carey, J., Geigerman, D., Krieger, C., McCollough, B.: A clinical study of hypothermic perfusion, J. Okla. M.A. 52: 671-674, 1959.
10. Zuhdi, N., Greer, A., McCollough, B., Carey, J., and Montroy, J.: Prolonged, simple aortic occlusion during hypothermic perfusion. An aid to open heart surgery. Postgraduate Medicine, 28: 507-509, 1960.
11. Zuhdi, N., Greer, A., Montroy, J., Carey, J., McCollough, B.: Hypothermic total body cardiopulmonary by-pass, report of 19 consecutive cases, J. Oklahoma M.A. 53: 83-85, 1960.
12. Zuhdi, N., McCollough, B., Carey, J., and Greer, A.: Double-Helical reservoir heart-lung machine, Archives of Surg. 82: 320-325, 1961.
13. Carey, J., Zuhdi, N., and Greer, A.: Hemodilution principle for open heart surgery. To be published.
14. Zuhdi, N., McCollough, B., Carey, J., Greer, A.: The use of citrated banked blood for open-heart surgery, Anesthesiology, 21: 496-501, 1960.

430 N.W. 12, Oklahoma City, Oklahoma

Though fat has long been used in the treatment of peptic ulcer, an understanding of the physiological basis for its use has not been taken into account. The long continued use of animal fats may produce coronary artery disease as manifested by clinical evidence.

Physiology of Fat-Anti-Acid Therapy For Peptic Ulcer*

VIRGIL RAY FORESTER, M.D.

Virgil Ray Forester, M.D., graduated from the University of Oklahoma School of Medicine in 1944 where he is now Assistant Professor in the Department of Medicine. His practice is limited to his specialty, gastroenterology.

THE TREATMENT of peptic ulceration, either in the stomach or in the duodenum, is to alter the chemistry of the acid-pepsin activity.

Though we know little or nothing as to the etiology of peptic ulceration, we do know that it will not develop in the absence of hydrochloric acid.

Pepsin, which as the title of the disease indicates, is the promoter of ulceration. It is the why, that disturbs us.

Pepsin can be inactivated if the pH of the stomach contents is reduced to 3.5 and is destroyed at a pH of 7.

To produce such an alteration, we must use some form of medication which will neutralize the acid and pepsin within the stomach. To do this, we direct our attention to other factors than the merely giving of an anti-acid substance which will reduce the gastric pH for short periods of time. Our treatment is basically the stimulation of hormones which will in turn inhibit the formation of acid and pepsin.

In reality, this is not a new idea. As far back as the first century A.D., men of medicine had some idea about the use of foods and anti-acids to relieve discomfort in the stomach. Christopher R. Pemberton[1] in the 19th century treated with anti-acids though he did not know about peptic ulcer.

The most scientific advancement came with Sippy[2] in 1912, when he introduced the Sippy diet. This treatment is familiar to you all; the liberal use of milk, cream, and at first, sodium-bicarbonate. It has been changed some of late, the sodium bicarbonate has been eliminated.

This approach to the treatment of peptic ulcer has become so ingrained in the thinking of physicians that, in its modified form, has become a standard procedure.

Now, there is every reason to believe that the Sippy program is of value only in principle. We know that without question it is unnecessary to place these patients on a severely altered diet. In fact, patients using an almost normal diet have shown a slight, though statistically insignificant, higher rate of healing.[3]

We know that it is not so much what foods are eaten, but how they are eaten that is important. For example, food entering the stomach and passing into the antrum stimulates the mucosa in that area to secrete a hormone called Gastrin.[4] Gastrin, being a hormone, is carried in the blood to its localé of function. This is the parietal cells, and it increases their output of hydrochloric acid. If, however, we allow the intake of food only

*Presented at the 55th Annual Meeting of the Oklahoma State Medical Association, May 7-9, 1961.

in frequent small feedings, we can lessen the production of gastrin. Not only do we lessen the production of gastrin, but we produce a sponge which will absorb the acid that is formed.

Since the earliest studies of Pavlov, it has been known that the ingestion of fat inhibits the secretion of gastric juice, and slows gastric motility. Any fat will do this.

An animal fat, such as cream, is a polysaturated fat which carries with it the problem of increasing the cholesterol content of the body. We are all familiar with the association of an elevated serum cholesterol and coronary artery disease.

At this time there is no scientific evaluation which will lay all the blame of coronary artery disease on cholesterol. There is at this time sufficient clinical evidence to associate an increased blood cholesterol level with this disease.

In a study of 149 male ulcer patients, the mortality rate from arteriosclerotic heart disease was 14 per cent higher than among white male subjects in the general population.[5]

There is a growing concern, as indicated in the medical literature that this clinical observation is true.

With these factors in mind, we have attempted to formulate a rational approach to the treatment of peptic ulcer.

To eliminate the hazard of increasing the cholesterol intake by the ingestion of a saturated fat, we have substituted corn oil, which is an unsaturated fat. Such a polyunsaturated fat produces the same results as cream, and most respects better. Further, there is evidence that an unsaturated fatty acid will prevent the absorption of cholesterol from the gastrointestinal tract.[6, 7]

The individual dose of any fat must be regulated. If a fat is introduced into the intestine in large amounts, it will bring about a depression of the gastric secretion for several hours, but will be followed by a phase of accelerated secretion. This is referred to as the bi-phasic effect of fat.[8] When the amount of fat administered is small in amount, the inhibitory phase is manifested, but the rebound phenomenon is absent.[9]

Fat plays its most important role in the treatment of ulcers which form in the duodenum. When fat enters the duodenum, it stimulates an increased formation of the hormone secretin. Secretin, acting on the pancreas causes it to flood the ulcer area with sodium bicarbonate, and a rapid reduction of the pH takes place.

Fats also stimulate the formation of cholestokinin which increases the flow of bile. Though bile is a weak anti-acid, it is thought that bile salts do have an inhibitory action on gastric secretion and motility.[10]

The one great hope in respect to any drug treatment of peptic ulcer is that it will disrupt or interfere with the process of hydrochloric acid formation without damaging the gastric cells or harming the host, and formulation of medicinal agents capable of enhancing the natural mechanism of the host.

This, I believe has been done to a great extent in the use of a mixture of calcium carbonate and corn oil. This mixture given in small doses on an hourly basis has produced surprisingly good results.[11]

Summary

Oil on ingestion inhibits gastric activity, and reduces the continued production of hydrochloric acid. By the use of polyunsaturated fat we eliminate the increased intake of cholesterol and lessen the hazard of an early death from coronary artery disease in the ulcer patient.

REFERENCES

1. Pemberton, C. R.: A Practical Treatise on Various Diseases of the Abdominal Viscera. 4th Ed., London, Bulmer and Nicol, 1820.
2. Sippy, B. W.: Gastric and Duodenal Ulcers (Medical Cure By an Efficient Removal of Gastric Juice Corrosion) J.A.M.A. 64: 1625, 1915.
3. Doll, R., et al.: Peptic Ulcer and Diets, Lancet, 1: 5-9, 1956.
4. Dreggstett, Lester R.: Artrum Motility as a Stimulate for Gastric Secretion. Gastroenterology, 24: 71-78, May 1953.
5. Sandweiss, D. J.: Do Patients with Peptic Ulcer Have Increased Risk of Premature Death from Arteriosclerotic (Coronary) Heart Disease. Mich. State Med Soc., 59: 1693, 1960.
6. Keys, A., et al.: "Essential" Fatty Acids, Degree of Unsaturation and Effect of Corn (Maize) in Serum Lipid Levels in Man. Lancet. 1: 66, 1957.
7. Anderson, J. T, et al.: The Effects of Different Food Fats on Serum Cholesterol Concentration in Man. J. of Nutrition. 62: 421, 1957.
8. Shay, H., et al.: Role of Upper Small Intestine In Control of Gastric Acid Control and an Explanation for Pathologic Gastric Physiology In Uncomplicated Duodenal Ulcer. Am. J. Digest, Dis., 9: 124, 1942.
9. Komaroo, O., et al.: Effect of Olive Oil and Cod Liver Oil on Gastric Secretion in Dog. Canad. May, 43: 120, 1940.
10. Menguy, Rene: The Role of Bile in Gastric Inhibition by Fat in the Small Bowel. 10: 164-167, 1960.
11. Forester, Virgil Ray: High Fat Treatment of Peptic Ulcer. J. Okla. State Med. Assoc. 53: 511-513. July 1960.

1111 North Lee, Oklahoma City, Oklahoma

Adverse Reaction to Synthetic Penicillin

REPORT OF A CASE

FRANK J. MARTIN, M.D., F.A.C.P.

Frank John Martin, M.D., Ada physician, graduated from the University of Kansas Medical School in 1944. Limiting his practice to internal medicine, he is Clinical Assistant at the University of Oklahoma School of Medicine.

In addition to his certification by the American Board of Internal Medicine, Doctor Martin is a member of the American College of Physicians.

Untoward reactions to penicillin, both mild and severe, are well documented in the literature. There are probably few physicians who have not had at least mild adverse reactions to penicillin given both orally and parenterally. As yet there have been no reports regarding unfavorable responses to synthetic penicillin (Potassium (a-Phenoxyethyl) Penicillin).

This product was developed by the Illinois Institute of Technology during 1959, and it is too early to find published articles on its effectiveness or untoward reactions.

At present there are available no fewer than five new penicillins produced by fermentation and partial synthesis. All affect the same organisms as older penicillins and have the same indications and precautions, although allergic reactions may be somewhat lessened. All produce early peak blood levels about twice as high as equivalent doses of oral Phenoxymethyl penicillin (Penicillin V).[1]

The report of the case below illustrates a case of allergic reaction to synthetic penicillin.

This 54-year-old man, a school teacher, reported that he had the flu and was taking some medications which he had obtained at a drug store. He had recently learned of the new oral synthetic penicillin and purchased some for the treatment of his illness. He had taken many types of oral penicillin in the past without difficulty.

On the 20th of January, 1960, the patient took one tablet and in a matter of 20 minutes developed an acute urticaria which was accompanied by difficult breathing, collapse, and vomiting. He was brought to the hospital immediately. When seen he had numerous urticarial areas on his body, and was quite apprehensive. His blood pressure was 114/70, pulse 82. His lungs seemed to be clear. His abdomen was normal to palpation. Complete blood count, serology, and urinalysis were all within normal limits. He was given 40 units of corticotrophin, IM, and 50 mg. of Diphenhydramine hydrochloride (Benadryl). The patient responded very well and was discharged from the hospital two days later.

It becomes apparent in reviewing the above case that the taking of synthetic penicillin is not without hazard. The manufacturers state in their literature that allergic reactions to oral penicillin are rare. They are more likely to occur in patients with history of hay fever, asthma, urticaria, and those previously who had reacted adversely to penicillin. Administration of oral penicillin in rare instances may produce acute anaphylaxis. Therefore epinephrine and cortico-steroids should be available for emergency treatment.

It becomes apparent that this form of penicillin should not be prescribed indiscriminately. Very definite indications should exist. One should also advise caution to patients who can obtain medications such as this without prescription. Probably some of this has come about as the result of somewhat erroneous statements in the lay press regarding this penicillin preparation.

It has been well established that prophylactic drugs, such as antihistamines, do not prevent penicillin reactions. Sensitivity tests are not predictable and it seems that the best preventive is its use only when absolutely indicated.[2]

REFERENCES

1. Morigi, E. M., Wheatley, W. B., and Albright, H.: A New Synthetic Peni- cillin. Antibiotics Annual 1959-1960, Antibiotica, Inc., New York, N. Y.
2. Martin, Frank J., Anaphylactoid Reaction to Oral Penicillin: Report of a case. Annals of Internal Medicine, Vol. 49, No. 3, September, 1958.

100 East Thirteenth Street, Ada, Oklahoma

Heart Page

The Cardiovascular System in Thyrotoxicosis

Editor—Thomas N. Lynn, M.D.

Hyperfunction of the thyriod gland produces many alterations in the dynamics of blood flow and heart function. One of the more popular current theories on the mechanism of the translation of excess thyroid hormone into the hyperdynamism of the cardiovascular system suggests that tri-iodothyronine, the most active of the thyriod hormones, augments or potentiates the action of epinephrine, causing tachycardia, cardiac arrythmia, increased cardiac output, and a widened pulse pressure, all responses producible by the administration of epinephrine. This theory has been given further credence by reports citing clinical improvement in hyperthyroid patients following medication with reserpine or guanethidine, both of which have some adrenergic blocking action.

There remains, however, an unsettled opinion as to whether thyroid hormone has a direct effect on the heart muscle. There have been animal studies showing an increase in heart rate when the isolated heart is perfused with a high concentration of thyroid hormone and there have been autopsy studies showing lesions of the heart muscle fibers in persons with hyperthyroidism. However, this does not exclude the possibility that thyroid hormone is working through epinephrine to produce these changes. Evidence, though, is increasing that the tachycardia and high cardiac output are not solely due to reflexes signaling a greater peripheral demand for oxygen and other nutrients.

There are manifestations of hyperthyroid heart disease other than those previously mentioned: the pulmonary second sound may be increased, there may be a low-intensity apical diastolic rumble, sounding much like the murmur of mitral stenosis, and there may be an ejection murmur in the pulmonic area along the left sternal border, mimicking pulmonic stenosis. If all three of the above auscultatory findings are present, ventricular septal defect with left-to-right shunt might enter into the differential diagnosis. These murmurs are again the result of the high hyperthyroid blood flow across normal valve orifices, that would accommodate a normal blood flow without turbulence sufficient to cause an audible murmur.

Usually in the young individual, the clinical diagnosis of hyperthyroidism presents little difficulty. Unfortunately, this is not so true in the aging person, and it is equally unfortunate that statistically, the degree to which one has heart disease as a result of hyperthyroidism increases greatly in the older age range. This increased incidence is due probably to slowly advancing, but otherwise latent coexisting change in the coronary arteries. Its manifestations in the older person may consist of cardiomegaly, atrial fibrillation and difficult-to-control congestive heart failure.

Hyperthyroid heart disease is relatively low on the list when weighed in per cent incidence against the total of all forms of afflictions of the cardiovascular system, but since it does represent a "curable" form of heart disease, it would seem appropriate that it should be high on the list of diagnostic possibilities. Once thought of, the presence of hyperthyroidism is easily confirmed or eliminated by chemical or radioisotope studies.—T.N.L.

Message from the Dean

Since the time of Hippocrates, a search has been made for better ways to impart medical knowledge and skills to others. It is the duty of each medical school to scrutinize its curriculum continually and make such changes as will benefit the students. We organized a special committee three years ago to reevaluate the curriculum of the School of Medicine. The committee delved into the philosophy of medical education, interviewed faculty members and students, interns and residents and practitioners, and visited other schools. From these studies the regular curriculum committee presented to the faculty a new curriculum based as nearly as possible on student needs and the capabilities and desires of our faculty.

A new feature of the curriculum is inclusion of elective subjects for a reasonable period of time without greatly increasing the length of the school year. One of the criticisms of the medical school curriculum has been that it was stereotyped and allowed little opportunity to explore any subject in depth as do the curricula in other branches of science. We think this objection has been met. Elective courses are to be given seriously and students are expected to take them seriously, for they will be graded exactly as other courses. They offer a richly rewarding experience. With one-sixth of the curriculum set aside for electives, one might think the basic instruction has been slighted, but this is not true. Hour for hour the same amount of time has been reserved for the standard curriculum. Changes, however, have been made. The number of formal lecture periods for an entire class has been decreased. Those lecture periods eliminated will be utilized by each department for teaching smaller groups of assigned students. By eliminating the quarter system in the third year, lectures do not have to be repeated. The Department of Psychiatry, Neurology and Behavioral Sciences is initiating a unique course running through all four years in which the faculty will endeavor to give the students a graduated approach to the mysteries of human behavior.

In the fourth year the outpatient experience will cover one-third of the year without interruption, giving the student a chance to learn approaches to diagnosis and care of the patient through all disciplines at the same time.

The curriculum is elastic enough to be easily adaptable to change if necessary, and to be compressed in event of national emergency. Of course there will be "bugs," but they can be dealt with. We believe the curriculum utilizes our resources in the best and most extensive manner for the benefit of the medical student, and that it encompasses modern principles of medical education.

Mark R Everett

The Serum Gylcoproteins and Seromucoid in Rheumatic Disease*

M. R. SHETLAR, Ph.D.**

Introduction

THE STUDIES of the protein bound carbohydrates of serum date back at least to the beginning of this century. The early work involved the determination of the reducing power of serum or serum proteins before and after hydrolysis. The increase in reducing power after hydrolysis was at first credited to protein bound glucose. Sometime later it was realized that the protein bound carbohydrate was not glucose, but consisted of more exotic monosaccharide residues—galactose, monnose, glucosamine and fucose__ recently sialic acid has been found in serum protein. The studies of these protein bound carbohydrates were largely of academic interest until it was demonstrated that these serum components were elevated in certain disease processes. The field as it relates to clinical chemistry has now become too large to adequately review in this presentation. Recent reviews have been made by Winzler,[1] Stary[2] and others.

Nomenclature

The nomenclature of the protein bound carbohydrates of serum is not as yet well established. Therefore, to avoid confusion in this presentation, the definitions of serum glycoprotein and seromucoid will be given as follows.

Serum glycoprotein may be defined as the total protein-bound-carbohydrate found in serum, and is determined by precipitation of the protein followed by quantitation of the carbohydrate moiety. The carbohydrate portion is usually quantitated by hexose or hexosamine determinations. In most of the work reported here hexose has been determined by reaction with tryptophan in strong sulfuric acid solution. This reaction was first described by Sheppard and Everett,[3] and further developed as a quantitative method by Shetlar, Foster and Everett.[4] In a series of studies involving rheumatic fever patients, bound hexose was found to be closely correlated with bound hexosamine (table I). As bound hexose is much easier to determine than is hexosamine, most of the data hereafter presented involve only bound hexose levels.

Patient	Number of Samples	Hexose ÷ Hexosamine	Correlation Coefficient (r)
1	26	1.59	.97
2	10	1.61	.84
3	11	1.69	.90
4	11	1.65	.98
5	11	1.61	.79

TABLE I

Correlation between protein bound hexose and hexosamine of the serum of patients with rheumatic fever.

*This work was supported in part by research grants from the National Institutes of Health, the American Cancer Society, and by the Oklahoma Chapter of the Arthritis and Rheumatism Foundation. A portion of the investigative work was conducted as part of the 1950-57 program of the Research Laboratory of the V. A. Hospital, Oklahoma City, Oklahoma.

**Currently, Professor of Biochemistry, Senior Research Fellow, National Institutes of Health and Research Affiliate, Oklahoma Medical Research Institute.

Presented at the Second Oklahoma Colloquy on Arthritis and Rheumatic Diseases.

From the Department of Biochemistry, University of Oklahoma School of Medicine, and the Endocrinology and Metabolism Section,, Oklahoma Medical Research Foundation, Oklahoma City, Oklahoma.

Seromucoid may be defined as that portion of the serum glycoprotein which is not precipitated by perchloric acid, but is precipitated by phosphotungstic acid. This fraction is quantitated by tyrosine, hexose, hexosamine, or protein determinations of the phosphotungstic acid precipitate. In the work presented here, the seromucoid has been estimated by hexose determinations using the tryptophan method.

Bound Carbohydrate of Serum Fractions

If one fractionates serum protein into its various fractions by any of the available procedures, the carbohydrate content of these fractions may be determined. The carbohydrate contents of albumin preparations have been found to be quite low, but all of the globulin fractions contained an appreciable amount of bound carbohydrate and, therefore, may properly be called glycoproteins by the definition of the Committee on Protein Nomenclature of the American Physiological Society and the American Society of Biochemists.[5]

The carbohydrate bound to various serum protein fractions has been estimated by separating the proteins by paper electrophoresis. The paper strip was then stained with the periodic-acid-Schiff reagent. For identification purposes, a second strip for protein studies was carried through the electrophoretic procedure with the one stained for glycoproteins. Typical densitometer patterns of glycoprotein strips are shown in figure 1. The sample from a patient with rheumatoid arthritis differed from that of a normal subject largely by having increased α_1, and α_2 fractions.[6]

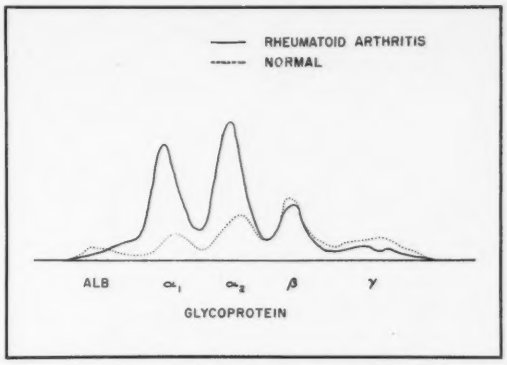

Figure 1. Typical densitometer tracings of paper strip electrophoretic patterns stained by the Periodic-acid-Schiff reagents for protein bound carbohydrate. Solid line curve is from serum of a patient with severe active rheumatoid arthritis (Act. IV, table V). Dotted line curve is from serum of a normal subject. The increase of bound carbohydrate in the α_1- and α_2- globulin ranges in rheumatoid arthritis is noteworthy.

Results of normal values of serum glycoproteins and seromucoid expressed as bound hexose are shown in table II. It may be noticed that glycoprotein and seromucoid values were comparatively low in fetal samples and increase with age of the individual. Also noticeable was the increase of glyco-

AGE OR CONDITION	NO. SAMPLES	SERUM GLYCOPROTEIN HEXOSE Mg/100 ml.		HEXOSE: PROTEIN RATIO*		SEROMUCOID HEXOSE Mg/100 ml.	
Fetal	15	80	(62-103)	1.41	(1.05-1.77)	6	(3-9)
3-8 yrs.	8	105	(94-118)	1.60	(1.47-1.82)		——
21-49 yrs.							
Males	18	110	(93-126)	1.58	(1.26-1.90)		
Females	10	111	(100-125)	1.58	(1.42-1.81)	12	(8-18)
61-85 yrs.	15	129	(104-138)	1.79	(1.62-2.06)		
Pregnancy (8-10th month)							
Primigravida	13	152	(120-172)	2.46	(2.26-2.63)		
Multigravida	16	150	(123-191)	2.42	(1.96-2.82)	12	(8-14)
Pregnancy (4th month)	6	122	(110-136)	1.87	(1.70-2.10)		

*Grams of bound hexose per 100 grams of serum protein.

TABLE II

Summary of serum glycoprotein in the normal human subject.

	SERUM GLYCOPROTEIN HEXOSE Mg/100 ml.	HEXOSE: PROTEIN RATIO*	SERUM PROTEIN Gm/100 ml.	SEROMUCOID HEXOSE Mg/100 ml.
Average Normal (48 samples)	116	1.66	7.02	16
Range	103-128	1.40-1.77	6.23-7.77	12-18
Respiratory Infection				
with Fever 1)	162	2.15	7.52	23
2)	164	2.11	7.78	21
Respiratory Infection				
without Fever	139	1.77	7.89	—

*Grams of bound hexose per 100 grams of serum protein.

TABLE III
Variation of serum glycoprotein in one individual over a ten year period

proteins in pregnancy without an accompanying elevation of seromucoid[7]

Table III depicts the variation of serum glycoproteins in one individual over a ten year period. Variation of the serum glycoproteins from time to time was of the same order of magnitude as the variation of the serum protein. The definitely elevated levels following a respiratory infection with fever and the slightly elevated levels following respiratory infection without fever were noteworthy.

CONDITION	NO.	SERUM GLYCOPROTEIN HEXOSE Mg/100 ml.	HEXOSE: PROTEIN RATIO*	SEROMUCOID HEXOSE Mg/100 ml.
Normal	80	114 ± 3	1.59 ± .03	11 ± 1
Malignancy	105	171 ± 3	2.69 ± .05	28 ± 2
Benign Lesions	31	123 ± 3	1.96 ± .04	—
Rheumatoid Arthritis				
Inactive	8	150 ± 4	1.91 ± .03	20 ± 2
Activity 2	13	176 ± 15	2.26 ± .06	30 ± 2
Activity 3 & 4	12	197 ± 6	2.73 ± .06	30 ± 1
Psychogenic Rheumatism	3	118	1.71	12
Degenerative Joint D.	28	134 ± 3	1.85 ± .02	13 ± 1
Gout, Active	2	188	2.65	22
Gout, Inactive	6	138	2.04	15
Rheumatic Fever				
Active	18	205 ± 7	2.78 ± .10	30 ± 2
Inactive	21	104 ± 4	1.91 ± .06	15 ± 1
Tuberculosis				
Minimal Active	6	144 ± 5	2.04 ± .07	19 ± 4
Moderate Advanced, Active	13	161 ± 7	2.21 ± .08	20 ± 2
Far Advanced, Active	23	185 ± 7	2.44 ± .08	19 ± 1

TABLE IV
Changes of serum glycoproteins in diseased states**

*Grams of bound hexose per 100 grams of serum protein.
**Figures following ± sign are standard errors.

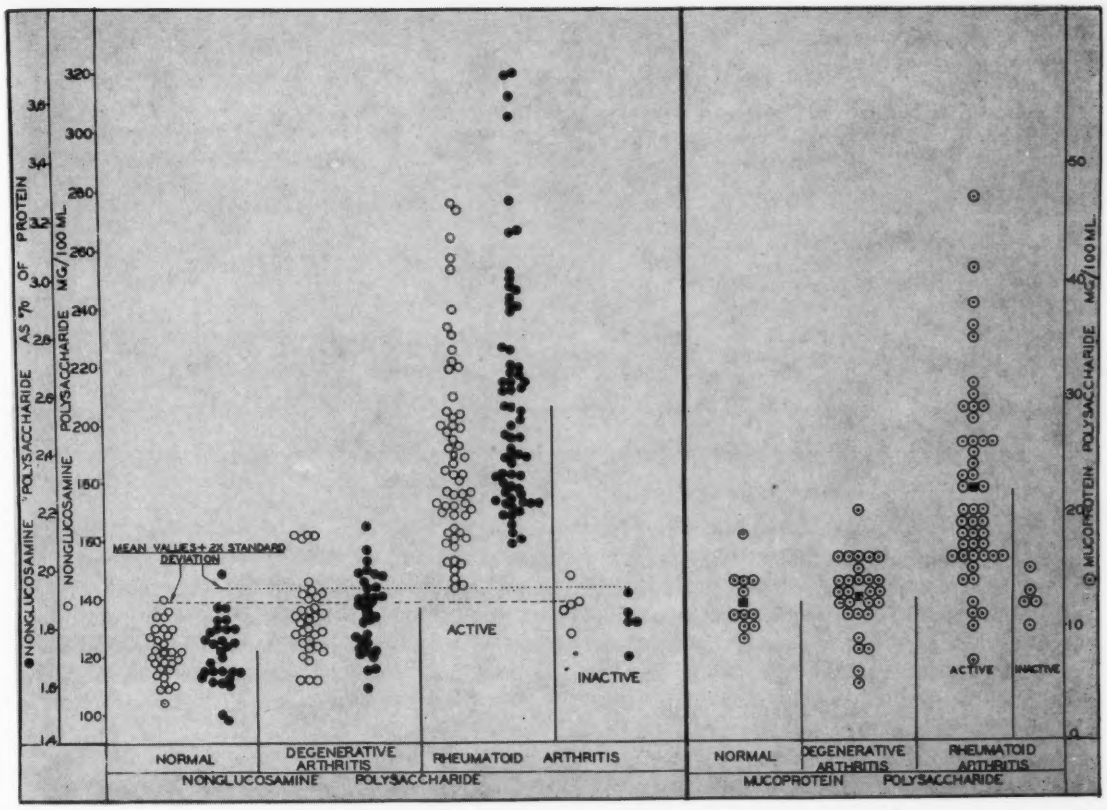

Figure 2. Total serum glycoprotein (serum polysaccharide) and seromucoid levels (mucoprotein) of normal subjects, of patients with degenerative joint disease and of patients with active and inactive rheumatoid arthritis. Glycoprotein levels expressed as total bound hexose per 100 ml. of serum are shown as open circles, while the glycoprotein levels expressed as a percentage of serum protein are shown as closed circles. Seromucoid (mucoprotein) hexose levels are expressed in milligrams per 100 ml. of serum and are depicted as open circles with black center. The square in each group represents the average for the group.

With these data as a background, changes in disease states may now be considered (table IV).[8] An important primary point is that elevated glycoprotein or seromucoid levels are not unique to patients with rheumatoid arthritis, but are found in many disease states—malignancy and tuberculosis, for example, as well as rheumatic fever and gout. Actually, in this laboratory an elevation in patients with rheumatoid arthritis was first noted in 1948 while making a study primarily devoted to cancer.[9] Patients with degenerative joint disease have only slightly elevated glycoproteins, while a few patients who were finally considered to have psychogenic rheumatism had normal glycoprotein and seromucoid levels.

The situation which occurs in rheumatic diseases has been more closely considered. Figure 2 graphically depicts the glycoproteins and seromucoids of patients with rheumatoid arthritis and with degenerative joint disease. Open circles represent glycoprotein hexose levels expressed as mg./100 ml. of serum. Closed circles represent the same data expressed as a ratio of glycoprotein hexose to serum protein. No overlap of the normal and active rheumatoid groups occurred with the latter method of presentation. Seromucoid results showed more overlapping. It appears, therefore, that the serum glycoprotein expressed as a ratio to the serum protein may have value in indicating the clinical activity of rheumatoid arthritis.

Correlation with Clinical Activity

In order to treat the data statistically, some one-figure parameter of inflammatory

Clinical Activity	Morning Stiffness	Sleep Pattern	Malaise, Fatigability, and Weakness	Acute Joint Manifestations	Fever	Appetite	Physical Accomplishments
I (None)	None	Undisturbed	Absent	Absent	None	Good	Limited only by deformity
II (Mild)	10 min.	Undisturbed	Slight	Transient joint pains	None	Untroubled	Limited only by fatigability and deformity
III (Moderate)	< 30 min.	Mild nocturnal restlessness; early morning awakening	Moderate	Joint swelling without redness or heat	None or slight temp. elevation	Capricious	Limited by joint pain, fatigability, and deformity
IV (Severe)	> 30 min.	Frequent awakening (fatigue)	Pronounced	Joint swelling with redness and heat	Elevation of body temp.	Anorexia	Limited by general malaise, joint pain, fatigability, and deformity

TABLE V

activity was required. The patients were rated clinically according to the criteria listed in table V; these criteria have been discussed in a previous report.[10] Using these ratings the laboratory data were treated statistically with the results shown in table VI. A number of the factors were found to have a significant correlation with clinical activity.[6] The total glycoprotein hexose, expressed as a ratio to the serum protein, however, is found to have the highest correlation. This finding is somewhat surprising as one would expect the glycoproteins of the α globulins which exhibit elevations in rheumatoid arthritis to be more closely correlated with activity. One explanation is that the analytical precision involved in the estimation of the glycoproteins in serum fractions is so low that the correlation coefficients are affected.

Acid Mucopolysaccharides in Serum

The amounts of uronic acid containing polysaccharides in serum are very low, but

	r*	t value+	P
Total Glycoprotein Hexose: Protein Ratio≠	0.914	12.50	.01
α_1 Globulin Hexose: Protein Ratio≠	0.559	3.75	.01
α_2 Globulin Hexose: Protein Ratio≠	0.296	1.72	.10
Albumin % of Total Protein	-0.563	3.79	.01
α_1 Globulin % of Total Protein	0.110	0.64	.30
α_2 Globulin % of Total Protein	0.635	4.58	.01
β Globulin % of Total Protein	0.183	1.34	.15
γ Globulin % of Total Protein	0.306	1.79	.10
α_1 Globulin Hexose, mg./100 ml.	0.654	4.82	.01
α_2 Globulin Hexose, mg./100 ml.	0.684	5.21	.01
Seromucoid Hexose, mg./100 ml.	0.689	3.49	.01
Sedimentation Rate	0.332	2.40	.05
Sialic acid**	0.588	5.14	.01

*r = Correlation Coefficient.

$+t = \frac{n^{\frac{1}{2}} r}{(1-r^2)^{\frac{1}{2}}}$ $n = N - 2$.

≠Bound hexose expressed as grams of hexose per 100 grams of the protein involved.

**As indicated by the diphenylamine reaction.

TABLE VI

Correlation of laboratory data with a rating of clinical activity.

No. of Animals in Group	Arthritic			Initial Infection
	Normal	Inactive	Active	
	11	4	12	16
Total serum glycoprotein (mg./100 ml.)*	163 ± 6	162	229 ± 5 ≠	205 ± 4 ≠
Seromucoid fraction (mg./100 ml).*	12 ± .7	16	31 ± 1.6 ≠	29 ± 1.9 ≠
Total serum protein (g./100 ml.)	7.17 ± .11	7.10	7.47 ± .12 ≠	7.23 ± .09 ≠
(Total serum glycoprotein ÷ total protein) × 100	2.27 ± .06	2.28	3.10 ± .06 ≠	2.85 ± .06 ≠
[(Total serum glycoprotein-seromucoid) ÷ total protein] × 100	2.10 ± .05	2.04	2.65 ± .04 ≠	2.45 ± .03 ≠
Seromucoid ÷ total glycoprotein	.075 ± .002	.099	.136 ± .006≠	.138 ± .007≠

* Expressed as bound hexose (galactose-mannose).

≠ Significantly higher than normal value at 1% level of probability.

TABLE VII

Effects of swine arthritis and acute erysipelas infection on protein-bound carbohydrates and proteins of swine.**

**Figures following ± sign are standard errors.

have recently been studied by several groups, Badin et al,[11] Bollet[12] and Kerby.[13] Kerby reported average levels of 0.226, 0.356, and 0.372 of uronic acid in milligrams per 100 ml. of serum for normal subjects, patients with non-rheumatoid inflammatory conditions, and patients with rheumatoid arthritis, respectively. Levels for patients with rheumatoid arthritis were not significantly different than those of patients with other inflammatory conditions. The low serum levels of uronic acid containing material as compared to the bound hexose or hexosamine levels are of interest in considering the origin of the serum glycoproteins.

Serum Glycoproteins in Arthritic Swine

Data in table VII is presented to call attention to an arthritic condition in swine in which the glycoprotein picture resembles that found in human rheumatoid arthritis.[14] Swine are to be recommended as experimental animals for the study of this disease. As described by Neher and co-workers,[15] arthritis in swine develops several weeks after an acute erysipelas infection.

Origin and Function of Serum Glycoprotein

Several hypotheses concerning the origin of elevated serum glycoprotein levels have been suggested. It may be fruitful to consider them together on a comparative basis.

1. *Glycoproteins are released into the blood stream from injured or inflamed tissue.*[16] This suggestion has the merit of simplicity. The fact that serum does not contain appreciable amounts of acid mucopolysaccharides (see section above on acid mucopolysaccharides) while tissues contain amounts of these components has been cited[1] as evidence against this hypothesis. However, if one postulates the existence of a mechanism to rapidly remove the acid mucopolysaccharides from serum, this objection may be circumvented. In this connection, acid mucopolysaccharides are known to occur in the urine. According to Di Ferrante[17] normal individuals excrete 2.7 to 5.4 mg. daily of acid mucopolysaccharide expressed as glucuronic acid. These figures are increased in patients with active rheumatoid arthritis to as much as 14.6 mg./day. This may indicate the existence of active renal mechanisms for the clearance of the acid mucopolysaccharides which in turn would account for the low serum levels following tissue injury. There is much evidence that carbohydrates which do not contain uronic acids occur in tissue.[18] In inflammatory states these tissue components may be released into the blood stream while the mucopolysaccharide components containing uronic acid are either retained in the injured tissue or rapidly removed from the blood stream. Release of such components may account for much of the elevated serum glycoprotein which occurs in inflammation.

2. *Glycoproteins arise as a response of the organism to tissue injury*[19] *or proliferation.*[7,9] According to this suggestion injured tissue components initiate some mechanism which causes increased production of serum

proteins which contain large amounts of bound carbohydrate. These proteins may have some physiological value in the organism's defense mechanisms or in the reparative processes. In support of this hypothesis may be cited the fact that many types of injury, either clinical or experimental, produce essentially the same response.[20] There are, however, exceptions and possibly differences of a quantitative nature in the distribution of bound carbohydrate among the serum protein fractions.

In contrast to inflammatory states where serum glycoprotein and seromucoid are both elevated, the sera of pregnant women show high serum glycoprotein levels, but normal seromucoid levels (table II). Electrophoretic studies of the sera of pregnant women indicate that most of the glycoprotein elevation is due to an alteration in β globulin. It may be tentatively suggested that the influence of inflammation on the protein synthetic processes is different from that found when only tissue proliferation or growth is involved. This would appear to be a fruitful field for further investigation.

3. *Glycoproteoins in serum become elevated because certain tissues (for example cancer tissue),*[21] *utilize proteins low in bound carbohydrate in preference to those high in bound carbohydrate.* This hypothesis suggests that the serum glycoproteins are relatively inert physiologically and that inflammatory and other pathologic conditions result in a higher utilization of proteins, such as serum albumin, which are low in bound carbohydrate. This suggestion is strengthened by the fact that a decrease in serum albumin occurs in inflammation conditions. It has not been established, however, whether this is due to a more rapid utilization or to a decrease in production of albumin.

In general, it is not possible at this time to decide which of the above hypotheses to favor. A consideration of these possibilities should, however, prove useful in designing further experimental work.

Summary. The research conducted in the field of serum glycoproteins (protein bound carbohydrate) as it relates to rheumatoid arthritis has been reviewed. High serum glycoprotein and seromucoid levels are consistently found in patients with active rheumatoid arthritis, indicating that profound alterations in the protein metabolism occur in this disease. High serum glycoprotein and seromucoid levels are not specific for rheumatoid arthritis, but are found in numerous other conditions. However, it may be emphasized that serum glycoprotein levels have a high correlation with the clinical activity of rheumatoid arthritis and therefore, may be of use in evaluating the clinical status of such patients. Hypotheses concerning the origin and function of the serum glycoproteins have been discussed.

BIBLIOGRAPHY

1. Winzler, Richard: Methods of Biochemical Analysis, Vol. II, 279, 1955. Interscience Publishers, 250 Fifth Avenue, New York, N.Y.

2. Stary, Z.: Clinical Chemistry 3: 557, 1957.

3. Sheppard, F., and Everett, M. R.: J. Biol. Chem. 119: 1, 1937.

4. Shetlar, M. R., Foster, J. V., and Everett, M. R.: Proc. Soc. Exp. Biol. and Med. 67: 125, 1948.

5. Committee on Protein Nomenclature: J. Biol. Chem. 4: xlviii, 1908.

6. Stidworthy, G., Payne, R. W., Shetlar, C. L. and Shetlar, M. R.: J. Clin. Invest. 36: 309, 1957.

7. Shetlar, M. R., Kelly, K. H., Foster, J. V., Shetlar, C. L., and Everett, M. R.: Am. J. Obstet. & Gyn. 59: 1140, 1950.

8. Shetlar, M. R.: J. Oklahoma State Med. Assoc. 51: 323, 1958.

9. Shetlar, M. R., Foster, J. V., Kelley, K. H., Shetlar, C. L., Bryan, R. S., and Everett, M. R.: Cancer Research 9: 515, 1949.

10. Shetlar, M. R., Payne, R. W., Padron, J., Felton, F., and Ishmael, W. K.: J. Lab. & Clin. Med. 48: 194, 1956.

11. Badin, J., Schubert, M., and Vouras, M.: J. Clin. Invest. 34: 1317, 1955.

12. Bollet, A. J., Seraydarian, M. W., and Simpson, W. F.: J. Clin. Invest. 36: 1328, 1957.

13. Kerby, G. P.: J. Clin. Invest. 37: 962, 1958.

14. Shetlar, M. R., Shetlar, C. L., Payne, R. W., Neher, G. M., and Swenson, C. B.: Proc. Soc. Exp. Biol. and Med. 98: 254, 1958.

15. Sikes, D., Neher, G. M., and Doyle, L. P.: Am. J. Vet. Med. 16: 349, 1955.

16. Catchpole, H. R.: Proc. Soc. Exp. Biol. and Med. 75: 221, 1950.

17. Di Ferrante, N.: J. Clin. Invest. 36: 1516, 1957.

18. Dische, Z., Danilczenko, A., and Zelmenis, G.: Chemistry and Biology of Mucopolysaccharides. Little, Brown and Company, Boston, 1958.

19. Seibert, F. B., Seibert, M. V., Atno, A. J., and Campbell, H. W.: J. Clin. Invest. 26: 90, 1947.

20. Shetlar, M. R., Bryan, R. S., Foster, J. V., Shetlar, C. L., and Everett, M. R.: Proc. Soc. Exp. Biol. and Med. 72: 294, 1949.

21. Weimer, H. E., Quinn, F. A., Redlich-Moshin, J., and Nishihara, H.: J. Natl. Cancer Inst. 19: 409, 1957.

800 N.E. 13th, Oklahoma City, Oklahoma

The Chemistry and Metabolism of the Acid Mucopolysaccharides of the Ground Substance of Connective Tissue

ALFRED JAY BOLLET, M.D.*

ACID MUCOPOLYSACCHARIDES are characteristic components of the ground substance of connective tissue. They were first characterized chemically about 25 years ago,[1] and have been the subject of increasingly intensive study since. Growing knowledge of the chemical and physical properties of these compounds has greatly increased our understanding of the physiology of connective tissue and of the changes which occur in disease. In this paper an attempt will be made to outline the present status of our knowledge of the chemistry and metabolism of the acid mucopolysaccharides.

Composition of the acid mucopolysaccharides: The acid mucopolysaccharides are carbohydrate compounds of large molecular weight. Most are associated with protein *in vivo*, but the nature of the bonds between polysaccharide and protein is in doubt. This association with protein is responsible for physical properties of some of these compounds; chondromucoid, a complex of chondroitin sulfate and protein occurring in cartilage, loses its viscosity when the protein moiety is digested with trypsin.[2] Hyaluronic acid, however, retains its viscosity *in vitro* when isolated free of protein but other physical properties are altered by proteolysis.[3]

There are many individual acid mucopolysaccharides, not all of which have been chemically characterized. Some of the details of their chemical composition are given in table I. In general they are polymers of repeating disaccharide units which consist of a basic sugar attached by a glycosidic linkage to an acidic sugar. In each, the basic sugar, or hexosamine, is an hexose with an amino group on the second carbon; this amino group usually is acetylated. N-acetylglucosamine and N-acetylgalactosamine are the two basic sugars which have been found in acid mucopolysaccharides.* In many compounds a sulfate group replaces anhydroxyl on one or more carbons of the hexosamine.[5] The acidic sugar is a hexuronic acid (a hexose with a carboxyl group on the sixth carbon); glucuronic acid is the hexuronic acid present in most of these compounds. The only other hexuronic acid which has been found in an acid mucopolysaccharide is L-iduronic acid, a 5-epimer of glucuronic acid, which is present in chondroitin sulfate B.[5] One mucopolysaccharide, keratosulfate, has no hexuronic acid component. It contains a sulfated glucosamine moiety linked to galactose (which may also be sulfated) as the basic repeating unit which forms the polymer.[7]

Properties of the acid mucopolysaccharides: In water, most of these compounds form viscous solutions or gels. This fundamental property of the "matrix," or ground substance, functions to lubricate moving surfaces such as joints and serous membranes. The acid mucopolysaccharides are also polyelectrolytes; they behave like ion exchange resins, binding ions and water. It is of interest in this regard to note that in aqueous solutions of hyaluronate, 99.7% of each particle is water.[8] An early demonstra-

*John and Mary R. Markle Scholar in Medical Sciences.

This paper is from the Department of Medicine of Wayne State University College of Medicine and Receiving Hospital, Detroit, Michigan.

Presented at the Second Oklahoma Colloquy on Arthritis and Rheumatic Diseases.

*N-acetyl mannosamine is a third naturally occurring hexosamine, thus far found only in sialic acid, and a component of serum, salivary and gastric glycoprotein.[4]

Mucopolysaccharide	Hexosamine	Hexuronic acid	Other
Hyaluronic Acid	N-acetylglucosamine	D-glucuronic acid	
Chondroitin	N-acetylgalactosamine	D-glucuronic acid	
Chondroitin Sulfate A	N-acetylgalactosamine-4-SO_4	D-glucuronic acid	
Chondroitin Sulfate B	N-acetylgalactosamine-4-SO_4	L-iduronic acid	
Chondroitin Sulfate C	N-acetylgalactosamine-6-SO_4	D-glucuronic acid	
Heparitin Sulfate	N-acetylglucosamine* N-SO_4-glucosamine*	D-glucuronic acid	
Keratosulfate	Glucosamine-SO_4	—	Galactose (-?SO_4)

*It has been suggested by K. Meyer that the repeating unit of heparitin sulfate is a tetrasaccharide consisting of two glucosamine-glucuronic acid units, with one amino group of each pair of glucosamines N-acetylated and the other N-sulfated.

Table 1. Composition of the repeating units in acid mucopolysaccharides of connective tissue.

tion of the affinity of connective tissue for water and electrolytes was made by Opie; he found that parenchymal tissues take up water from hypotonic salt solutions and lose water to hypertonic solutions, but tissues rich in connective tissue take up water from both weak and strong salt solutions.[9] The binding of ions by mucopolysaccharides creates reservoirs of sodium and other electrolytes in connective tissue.

A preferential affinity of chondroitin sulfate for divalent ions, particularly calcium, has been demonstrated. The calcium concentration in cartilage is proportional to its chondroitin sulfate content,[10] and the concentration of bound calcium in cartilage may be ten times greater than that in plasma.[11] Histologically, a local increase in chondroitin sulfate content, indicated by increased metachromasia, can be seen in sites of calcification such as newly calcified bone, zones of provisional calcification of cartilage, and areas of pathologic calcification including certain types of renal calculi.[11,12,13] These observations point to a significant role of chondroitin sulfate in the mechanism of calcification.

The acid mucopolysaccharides may also play a role in collagen fibril formation. The formation of fibrils from the soluble form of collagen, tropocollagen, has been shown to occur *in vitro* on the addition of chondroitin sulfate.[14] Fibrillogenesis can be induced *in vitro* by a variety of influences, but the intimate association of chondroitin sulfate and collagen *in vivo*, as demonstrated by Patridge,[15] supports the likelihood that chondroitin sulfate plays a role in collagen metabolism. The repeating units of the mucopolysaccharide may act as a template guiding the spacing of units in the protein molecule.

Distribution of acid mucopolysaccharides: In most locations a mixture of acid mucopolysaccharides is found. An exception to this is synovial membrane and synovial fluid, where hyaluronic acid is the only mucopolysaccharide present.[16] Therefore, if an abnormality in the metabolism of acid mucopolysaccharides is fundamental to the pathogenesis of rheumatoid arthritis, it must concern the metabolism of hyaluronic acid. The specific composition of the mixture of mucopolysaccharides in some tissues is of interest. Hyaline cartilage contains both chondroitin sulfate A and chondroitin sulfate C, but it has been found that the proportion of chondroitin sulfate C is very low at birth and increases progressively with age.[5] During the decades in which osteoarthritis is most frequently found chondroitin sulfate C is much more abundant than chondroitin sulfate A. Since failure of the formation of cartilage matrix seems to be a fundamental aspect of the pathogenesis of osteoarthritis, it seems important to approach this problem by study of metabolism of chondroitin sulfate C. It has recently been demonstrated that two acid mucopolysaccharides, chondroitin sulfate B and heparitin SO_4 are present in large amounts in tissues and in the urine of patients with Hurler's syndrome (gargoylism).[17,18] Study of metabolism of these substances, therefore, would seem to be fundamental to study of this disease.

Intermediary metabolism of the acid muco-

polysaccharides: The enzymatic steps in the synthesis and breakdown of the acid mucopolysaccharides have been studied in considerable detail in recent years. This work has been done primarily in yeast and streptococci, and to some extent in parenchymal organs. Recently, it has been found that the metabolism of mucopolysaccharides can be studied in mammalian connective tissue and human synovial tissue.[19] For this purpose, the granulation tissue which fills inert synthetic sponges inserted under skin of animals has been used. This tissue consists almost solely of fibroblasts; the acid mucopolysaccharide, protein and desoxyribose nucleic acid content of this tissue has been studied.[20]

Of primary importance in the metabolism of the mucopolysaccharides is the observation that labelled glucose is incorporated directly into both the hexosamine and the uronic acid moieties of mucopolysaccharides without change in the location of the labelled carbon.[21, 22] This indicates that the hexose molecule is not cleaved and reassembled during the synthesis of the mucopolysaccharide.

Also of fundamental importance is the observation that uridine nucleotides, which play a role in the metabolism of many carbohydrate compounds, are involved in the synthesis of the mucopolysaccharides. Uridine diphosphoglucuronic acid (UDPGA) is the donor of the glucuronic acid moiety[23] and uridine diphosphoacetylglucosamine (UDPAG) the donor of the N-acetylglucosamine moiety[23, 24] in hyaluronic acid synthesis. Uridine diphosphoglucose (UDPG), the precursor of UDPGA, and UDPAG have been found isolated from extracts of mammalian connective tissue.[25]

The steps in the intermediary metabolism of the glucuronic acid component of hyaluronic acid are summarized in table II. These are the same steps which occur in the liver in the synthesis of UDPGA, which serves as the donor of glucuronic acid in the detoxification and excretion of wide variety of compounds.[26] The enzymes which are necessary to synthesize UDPGA from glucose (hexokinase, phosphoglucomutase, UDPG pyrophosphorylase, and UDPG dehydrogenase) have been demonstrated in mammalian connective tissue.[19]

The intermediary metabolism of the acetylglucosamine component of hyaluronic acid is more complex. Work in yeast, streptococci, liver and kidney have demonstrated many enzymes which may be involved in the synthesis of the donor of the acetylglucosamine, UDPAG. Some of the possible routes in the synthesis of this compound are shown in table III. The relative activity of each of these pathways in connective tissue is a subject of active study at the moment.

Another major problem in the metabolism of mucopolysaccharides is the nature of the system which links the glucuronic acid and acetylglucosamine provided by their respective uridine nucleotides. Activity of this system has been demonstrated in cell free extracts of streptococci by Markovitz, Cifonelli and Dorfman.[24] The exact nature and mechanism of action of this enzyme is as yet unclear. In liver, kidney and intestine it has been found that the enzyme gulcuronosyl transferase links glucuronic acid, donated by UDPGA, to a variety of phenolic and alcoholic compounds. Glucuronosyl transferase has been shown to be present in con-

1. Glucose + ATP	hexokinase ⟶	glucose-6-PO_4 + ADP
2. Glucose-6-PO_4	phosphoglucomutase ⟷	glucose-1-PO_4
3. Glucose-1-PO_4 + uridine triphosphate (UTP)	UDPG pyrophosphorylase ⟷	uridine diphosphoglucose (UDPG) + PP
4. UDPG + 2 DPN	UDPG dehydrogenase ⟶	uridine diphosphoglucuronic acid (UDPGA) + 2 DPNH + $2H^+$

Table II. Steps in the synthesis of uridine diphosphoglucuronic acid, the donor of glucuronic acid in mucopolysaccharide synthesis.

Fructose-6-PO_4 + glutamine	Aminotransferase	Glucosamine-6-PO_4 + glutamic acid
Glucosamine-6-PO_4 + acetyl coenzyme A	Acetylase	Acetylglucosamine-6-PO_4 + coenzyme A
Acetylglucosamine-6-PO_4	Phosphoisomerase	Acetylglucosamine-1-PO_4
Acetylglucosamine-1-PO_4 + uridine triphosphate (UTP)	UDPAG pyrophosphorylase	Uridine diphosphoacetylglucosamine + PP (UDPAG)

Table III. One possible route in the synthesis of uridine diphosphoacetylglucosamine, the donor of acetylglucosamine in the synthesis of hyaluronic acid.

nective tissue[19] but there is considerable doubt as to its role in mucopolysaccharide metabolism.

Less information is available concerning the breakdown of mucopolysaccharides in connective tissue. Testicular hyaluronidase has been shown to depolymerize hyaluronic acid and chondroitin sulfate to oligosaccharides;[27] however, the testis is the only mammalian tissue which has been found to contain this enzyme and its role in connective tissue mucopolysaccharide metabolism is doubtful. Beta-glucuronidase, which is present in most tissues including connective tissue and human synovial tissue,[19] splits the glucuronidic link between the first carbon of the glucuronic acid and third carbon of the acetylglucosamine in hyalobiuronic acid, the disaccharide repeating unit of the hyaluronic acid polymer.[27] Beta-glucosaminidase, which is also present in most tissues, splits the other bond in the chain, the glucosaminidic linkage between the first carbon of the acetylglucosamine and the fourth carbon of the glucuronic acid.[28] These two enzymes acting in concert on alternate bonds may depolymerize polysaccharide units, or may only break apart oligosaccharides previously prepared by a hyaluronidase-like depolymerase.

The rate of turnover of acid mucopolysaccharides in rabbit skin has been studied with the aid of C^{14} labelled acetate and S^{35} labelled sulfate by Shiller and Dorfman.[29] Hyaluronic acid turnover is faster than that of the sulfate containing mucopolysaccharides; a probable turnover rate of two days was found, indicating relatively active synthesis and breakdown of this compound *in vivo*.

Hormonal effects on connective tissue mucopolysaccharides: Observations of considerable clinical importance have been made concerning hormonal effects on connective tissue mucopolysaccharides. For example, hypothyroid states are known to be associated with myxedema, in which the "mucinous edema" is due to an increase in the mucopolysaccharide content of skin, subcutaneous and other tissues. Histochemical studies have shown that this accumulation is present in the hypothyroidism due to primary failure of thyroid function as well as that due to failure of pituitary function; these changes disappear when thyroid hormone is administered to either type of patient.[30] To confuse the issue, however, a similar change is found clinically and histochemically in the pretibial skin of patients with hyperthyroidism and exophthalmos; this change persists after these patients are made euthyroid, and is not affected by large doses of thyroid hormone given for long periods.[31,32] Chemically, increased concentrations of acid mucopolysaccharides have been demonstrated in the skin of patients with pretibial myxedema, both locally and generally.[32] Although the clinical, histochemical and chemical findings in the skin are similar in these two types of disordered thyroid function, there are differences in the underlying endocrinologic abnormality and response to therapy. In all probability, therefore, the basic mechanisms of pathogenesis are different. It has been postulated that a direct effect of pituitary thyrotropic hormone is responsible for the changes in mucopolysaccharide content of the skin and orbit in hyperthyroidism with exophthalmos. Recently evidence has been found to support this concept, since an increase in mucopolysaccharide concentration has been found in the thyroid gland, neck muscle and extra-

ocular muscles of dogs treated with thyrotropic hormone.[33]

The effects of adrenal cortical hormones and sex hormones on the acid mucopolysaccharides of connective tissue have also been studied to some extent; the therapeutic effects of adrenal steroid hormones in the rheumatic diseases have stimulated interest in this subject. Cortisone and related steroids have been shown to inhibit fibroblast proliferation and wound healing[34] and to decrease hyaluronate and chondroitin sulfate synthesis *in vivo*.[35] The mechanism of this influence on connective tissue is being studied at the enzymatic level. A prime example of the influence of sex hormones on mucopolysaccharides is the stimulation of hyaluronic acid production in the cock's comb by testosterone.[36]

The poor wound healing, susceptibility to infection and degenerative change which occur in connective tissue in diabetics has stimulated investigation of the effect of diabetes on mucopolysaccharide metabolism. Since glucose is the immediate precursor of hexosamine and hexuronic acid components of acid mucopolysaccharides, factors influencing the availability of glucose for the production of these compounds may influence connective tissue metabolism. Shiller and Dorfman have shown that the incorporation of labelled acetate and sulfate into mucopolysaccharides in the skin is reduced in diabetic animals to one-third that of controls.[37]

Conclusions

We have seen a rapid increase in knowledge of the chemistry and metabolism of mucopolysaccharides in recent years, and particularly in the past decade. Although their existence was only suspected 25 years ago, at the present time we know a great deal about their composition, chemical properties and intermediary metabolism, and we are beginning to understand the changes which occur in disease. It is not unreasonable to expect that the rate of accumulation of new information will continue to be high, and that new light will be shed on many clinical problems in the near future.

REFERENCES

1. Meyer, K., and Palmer, J. W.: The polysaccharide of the vitreous humor. J. Biol. Chem. 107: 629, 1934.
2. Shatton, J., and Schubert, M.: Isolation of a mucoprotein from cartilage. J. Biol. Chem. 211, 565, 1954.
3. Blumberg, B. S., and Ogston, A. G.: Physicochemical studies on hyaluronic acids. In Chemistry and Biology of Mucopolysaccharides, Ciba Foundation, Little, Brown & Co., Boston, 1958, p. 22.
4. Roseman, S., and Comb, D. G.: The hexosamine moiety of n-acetylneuraminic acid (sialic acid). J. Am. Chem. Soc. 80: 3166, 1958.
5. Meyer, K., Hoffman, P., and Linker, A.: Mucopolysaccharides of costal cartilage. Science 128: 896, 1958.
6. Hoffman, P., Linker, A., and Meyer, K.: Uronic acid of chondroitin sulfate B. Science 124: 1252, 1956.
7. Meyer, K., Linker, A., Davidson, E. A., and Weissmann, B.: The mucopolysaccharides of bovine cornea. J. Biol. Chem. 205: 611, 1953.
8. Blumberg, B. S., and Oster, G.: Light-scattering studies on hyaluronic acid. Science 120: 432, 1954.
9. Opie, E. L.: The movement of water in tissues removed from the body and its relation to movement of water during life. J. Exper. Med. 89: 185, 1949.
10. Boyd, E. S., and Newman, W. P.: Surface chemistry of bone V. Ion-binding properties of cartilage. J. Biol. Chem. 193: 243, 1951.
11. Engel, M. R., Joseph, N. R., and Catchpole, H. R.: Homeostasis of connective tissues I. Calcium-sodium equilibrium. A.M.A. Arch. Path. 58: 26, 1954.
12. Rubin, P. S., and Howard, J. E.: Histochemical studies on the role of acid mucopolysaccharides in calcifiability and calcification. Second Conf. on Metabolic Interrelations, Josiah Macy, Jr., Foundation, New York, 1950.
13. Sobel, E. A., and Burger, M.: Calcification XIV. Investigation of the role of chondroitin sulfate in the calcifying mechanism. Proc. Soc. Exp. Biol. & Med. 87: 7, 1954.
14. Delaunay, A., and Bazin, S.: Collagen-mucopolysaccharide combinations in vitro and how they are affected by bacterial polysaccharides and salts, in Connective Tissue, Charles C. Thomas, Springfield, 1957, p. 105.
15. Patridge, S. M.: The chemistry of connective tissues I. The state of combination of chondroitin sulfate in cartilage. Biochem. J. 43: 387, 1948.
16. Meyer, K., Smyth, E. M., and Dawson, M. H.: The isolation of a mucopolysaccharide from synovial fluid. J. Biol. Chem. 128: 319, 1939.
17. Meyer, K., Grumbach, M. M., Linker, A. and Hoffman, P.: Excretion of sulfated mucopolysaccharides in gargolism (Hurler's Syndrome). Proc. Soc. Exp. Biol. & Med. 97: 275, 1958.
18. Dorfman, A., and Lorincz, A. E.: Occurrence of urinary acid mucopolysaccharide in the Hurler syndrome. Proc. Nat. Acad. Sci. 43: 443, 1957.
19. Bollet, A. J., Goodwin, J. F., and Brown, A. K.: Metabolism of mucopolysaccharides of connective tissue I. Studies of enzymes involved in glucuronide metabolism. J. Clin. Investig., in press (March, 1959).
20. Bollet, A. J., Goodwin, J. F., Simpson, W. F., and Anderson, D. V.: Mucopolysaccharide, protein and desoxyribosenucleic acid concentration of granulation tissue induced by polyvinyl sponges. Proc. Soc. Exp. Biol. & Med. 99: 418, 1958.
21. Roseman, S., Moses, F. E., Ludowieg, J., and Dorfman, A.: The biosynthesis of hyaluronic acid by group A streptococcus I. Utilization of 1-C^{14}-glucose. J. Biol. Chem. 203: 213, 1953.
22. Roseman, S., Ludoweig, J., Moses, F. E., and Dorfman, A.: The biosynthesis of hyaluronic acid by group A streptococcus II. Origin of the glucuronic acid. J. Biol. Chem. 206: 665, 1954.
23. Glaser, L., and Brown, D. H.: The enzymatic synthesis in vitro of hyaluronic acid. Proc. Nat'l Acad. of Sci. 41: 253, 1955.
24. Markovitz, A., Cifonelli, J. A., and Dorfman, A.: Biosynthesis of hyaluronic acid by cell-free extracts of group A streptococci. Biochem. Biophys. Acta 28: 453, 1958.
25. Decker, J. L., and Gross, J.: The acid soluble nucleotides of growing connective tissue. Presented at 4th Interim Scientific Session, Am. Rheumatism Assoc., Dec. 6, 1957.
26. Kalckar, H. M., and Maxwell, E. S.: Biosynthesis and metabolic function of uridine diphosphoglucose in mammalian organisms and its relevance to certain inborn errors. Physiol. Rev. 38: 77, 1958.
27. Linker, A., Meyer, K., and Weissmann, B.: Enzymatic formation of monosaccharides from hyaluronate. J. Biol. Chem. 213: 237, 1955.
28. Roseman, S., and Dorfman, A.: Variation-Glucosaminidate. J. Biol. Chem. 191: 607, 1951.
29. Schiller, S., Mathews, M. B., Cifonelli, J. A., and Dorfman, A.: The metabolism of mucopolysaccharides in animals III. Further studies on skin utilizing C^{14}-glucose, C^{14}-acetate and S^{35} sodium sulfate. J. Biol. Chem. 218: 139, 1956.
30. Gabrilove, J. L. and Ludwig, A. W.: The histogenesis of myxedema. J. Clin. End. & Metab. 17: 925, 1957.
31. Beierwaltes, W. H.: Clinical correlation of pretibial myxedema with malignant exophthaloms. Ann. Int. Med. 40: 968, 1954.
32. Beierwaltes, W. H., and Bollet, A. J.: Mucopolysaccharide content of skin in pretibial myxedema. J. Clin. Investig., in press (June, 1959).
33. Bollet, A. J., and Beierwaltes, W. H.: Manuscript in preparation.
34. Ragan, C., Howes, E. L., Plotz, C. M., Meyer, K., and Blunt, J. W.: The effect of cortisone on production of granulation tissue in the rabbit. Proc. Soc. Exp. Biol. & Med. 72: 718, 1949.
35. Schiller, S., and Dorfman, A.: The metabolism of mucopolysaccharides in animals: The effect of cortisone and hydrocortisone on rat skin. Endocrinology 60: 376, 1957.
36. Ludwig, A. W., and Boas, N. F.: The effects of testosterone on the connective tissue of the comb of the cockerel. Endocrin. 46: 291, 1950.
37. Schiller, A., and Dorfman, A.: The metabolism of mucopolysaccharides in animals IV. The influence of insulin. J. Biol. Chem. 227: 625, 1957.

University of Virginia School of Medicine
Charlottesville, Virginia

ABSTRACTS

Treatment of Staphylococcal Infections In the Young Infant With Tetracycline And Novobiocin in Combination

MARY I. ABBOTT* and HARRIS D. RILEY, Jr.**

AM&CT, 8: 23-28, January 1961

Twenty-five infants with proved straphylococcal infections were treated with a combination of tetracycline and novobiocin (in a 2:1 ratio) with potassium metaphosphate. All of the causative strains of staphylococci were coagulase positive, and the majority were phage type 70 or 44 A. Of the 25 patients which included 20 infants with clinically severe pyoderma and 5 with staphylococcal pneumonia and septicemia, 24 exhibited a satisfactory clinical and bacteriological response to treatment with this antibiotic combination. One patient with staphylococcal pneumonia and one of the two infants with streptococcal omphalitis did not respond. The drug was well tolerated and produced no untoward reactions.

*Resident in Pediatrics.
**Professor of Pediatrics.

Albumin Binding of Chlorpropamide

PHILIP C. JOHNSON,* K. M. WEST,** and FRANKIE MASTERS***

Metabolism, 9: 1111-1117, December 1960

S^{35}-labeled chlorpropamide was used in vitro and in vivo to investigate serum protein binding. When chlorpropamide and pooled normal serum were dialyzed against phosphate buffer at pH 7.6, about 80% of the chlorpropamide remained bound to serum protein. Electrophoresis showed that albumin was the serum protein fraction responsible for the binding. When dialyzed with albumin both within the dialysis sac and in the dialysate, chlorpropamide distributed itself according to the relative albumin concentrations. In patients with serum protein levels ranging from 1.67 to 3.93 gm.%, serum chlorpropamide levels correlated well with total vascular albumin. When chlorpropamide concentrations in serum and edema fluid were determined simultaneously, the serum level was 2 to 6 times that in edema fluid. Although in previous studies no chlorpropamide was found in red blood cells, there is some evidence that the drug may be distributed intracellularly.

*Radioisotope Laboratory, Methodist Hospital, Houston, Texas.
**Assistant Professor of Medicine, University of Oklahoma School of Medicine.
***Technician, Veterans Hospital, Oklahoma City.

Incorporation of Radioactive Phosphate Into Organic Phosphates of Tocopherol-Deficient and Control Rabbit Muscle

Y. F. MASTERS,* P. C. JOHNSON,** W. H. MOSLEY,*** P. B. McCAY,**** and R. CAPUTTO*****

Am. J. Physiol. 199: 295-298, 1960

Control and vitamin E-deficient rabbits were compared in their ability to incorporate intravenously injected radioactive phosphate into muscle intracellular organic phosphate. Vitamin E-deficient dystrophic muscle received inorganic phosphate from the extracellular fluid at a higher rate than did the control. Specific activity ratios showed that a smaller portion of this phosphate was converted into organic phosphate, making it appear that dystrophic muscle is less efficient than the control. Evidence is presented suggesting that at least two inorganic phosphate pools may exist in muscle cells.

*Technician, Veterans Hospital, Oklahoma City.
**Radioisotope Laboratory, Methodist Hospital, Houston, Texas.
***Resident, Johns Hopkins.
****Assistant Professor of Research Biochemistry.
*****Professor of Research Biochemistry.

Coronary Blood Flow Measured by a Surface Counting Technique

DAVID D. SNYDER,* G. SEVELIUS,** P. C. JOHNSON,*** and GILBERT S. CAMPBELL****

Surgery, Gynecology and Obstetrics, 3: 371-375, Sept. 1960

The time activity curve registered precordially has been shown to be composed of three separate peaks. The first two of these peaks represents the passage of the radioactive bolus through the right and left chambers of the heart. The third of these three peaks appears to represent coronary circulation. The evidence for this is that this peak is not present when the radioactive tracer bolus is excluded from the coronary circulation, that on the average this peak starts simultaneously with the appearance of the radioactivity in the peripheral circulation, and that on the average this peak ends before the beginning of the earliest recirculation of the tracer bolus.

*Resident in Surgery.
**Department of Medicine, University Hospital.
***Radioisotope Laboratory, Methodist Hospital, Houston, Texas.
****Professor of Surgery.

Inhibition of Gastric Secretion in the Rat by Normal and Abnormal Human Gastric Juice

RENE MENGUY,* and WILLIAM O. SMITH**

Proc. Soc. Exptl. Biol. Med. **105:** 238-239, 1960

Intravenous administration of dialyzed, lyophilized gastric juice from normal subjects, patients with peptic ulcer and patients with gastric carcinoma, induced pronounced depression of secretion of hydrochloric acid and water in the pylorus ligated rat. Peptic ulcer juice had the greatest inhibitory effect, whereas gastric carcinoma juice had the least.

*Assistant Professor of Surgery.
**Assistant Professor of Medicine.

Mechanism of Inhibition of Gastric Secretion in the Rat Following Bile Duct Ligation

RENE MENGUY* and EDWARD KOGER**

Proc. Soc. Exptl, Biol. Med. **101:** 666-668, 1959

Gastric secretory activity (volume and free HCl concentration) in the pylorus ligated rat is inhibited by bile duct ligation. This is not due to removal of bile from the intestine but appears to be due to increase in level of circulating bile constitutients, particularly bile salts, resulting from obstruction to the outflow of bile from the liver.

*Assistant Professor of Surgery.
**Research Assistant.

FACULTY NEWS

DUBOWSKI

MOORE

KNOX

GEYER

Regents Make Four New Appointments

Kurt M. Dubowski, Ph.D., University of Florida, has been appointed director of Clinical Chemistry and Toxicology Laboratories at University Hospitals and associate professor of clinical chemistry and toxicology in the Department of Biochemistry effective September 1.

Doctor Dubowski heads the clinical laboratories and is an associate professor at Florida, where he also serves as chairman of medical technology. He received his Ph.D. at Ohio State University in 1949.

The appointment is one of several recently approved by University Regents.

Others named to full-time post were:

Joanne I. Moore, Ph.D., assistant professor of pharmacologyy; Gaylord Shearer Knox, M.D., assistant professor of radiology; and Robert W. Geyer, M.D., instructor in radiology.

Doctor Moore completed her doctoral work at the University of Michigan in 1959 and has been a fellow in pharmacology at Emory University since that time.

Doctor Knox, radiologist at the U.S. Army Hospital, Fort Sill, will join the faculty in August. He was chief of radiologic services at the army hospital in Bad Cannstatt, Germany, two years before going to Fort Sill this spring. He is a graduate of Tulane University School of Medicine. The new radiology instructor, Doctor Geyer, came here from the University of Arkansas Medical Center, where he completed his residency training this summer. He is an Arkansas medical graduate.

News

News of Legislative Progress, and a Tip of the Hat to those Responsible.

Three Legislative Plums for Medicine

Oklahoma's legislative marathon, the 28th session of the state legislature, broke camp on July 29th after enacting nearly four hundred laws out of more than one thousand bills in the hopper.

Among the new laws were three significant milestones in medical legislation: Senate Bill 291, authored by Senator Yates Land of Tulsa, granting civil immunity for any acts or omissions associated with rendering professional care at the scene of an emergency; Senate Bill 81, authored by Senator Charles Wilson of Sayre, establishing a Board of Unexplained Deaths and creating a medical examiner system to investigate such deaths; and, Senate Bill 399, originally authored in the House (HB 1024) by Representative Bryce Baggett of Oklahoma City, enabling professional men to incorporate the business aspects of their practices.

These proposals carried the official stamp of approval of the Oklahoma State Medical Association and were actively supported by association representatives as the bills were led and sometimes pushed by their authors through the law-making processes.

Highlights of the new laws are outlined below, in order of their legislative approval.

Senate Bill 291

It has become increasingly hazardous in recent years for a physician to stop at an accident site and render first aid to the injured. Physicians who did so had no control over the future course of care and were often held liable for their acts.

With his "Good Samaritan" law, Senator Land hopes to alleviate the risks involved in Oklahoma by relieving the physician of any civil liability for anything he does or does not do in rendering first aid under austere, emergency conditions. In such a situation, when the doctor does not voluntarily take complete charge of the patient, an interpretation of the new law indicates that the doctor-patient relationship is not assumed and the doctor has no more responsibility than that of a layman.

Senate Bill 81

Covered elsewhere in this *Journal* (editorially by Doctor Russell, page 428), Senate Bill 81 is the realization of one of the most sought after pieces of legislation in OSMA history. It was successfully fought through by Senator Wilson after similar bills had failed in previous legislative sessions.

In brief, the "unexplained death" bill was designed to supplant the antiquated coroner's court with a more scientifically sound system of state and county medical examiners. It is effective January 2, 1962.

A Board of Unexplained Deaths, comprised of the Director of the State Bureau of Investigation, the State Commissioner of Health and the O.U. Medical School Dean, is created to assume overall responsibility for the program. It will establish rules and regulations and appoint a qualified pathologist to serve as State Medical Examiner. The state examiner shall, in turn, appoint county examiners to four year terms.

How It Works

The following types of human deaths shall be investigated by the county medical examiners in cooperation with law enforcement officials: violent deaths; sudden deaths of apparently healthy persons, when the cause is not readily recognizable; deaths under suspicious, unusual or unnatural circumstances; and deaths from diseases which menace public health.

A county examiner, upon being notified, will immediately investigate such deaths and report his findings to the State Medical Examiner on forms provided. If he is not satisfied as to cause of death, he will tele-

Yates Land
GOOD SAMARITAN

Charles Wilson
MEDICAL EXAMINER

Bryce Baggett
CORPORATIONS

phone or telegraph the state examiner, who is empowered to conduct further investigation, including autopsy.

If written authorization for an autopsy cannot be obtained from the deceased's spouse or relatives, the county attorney, District or County Courts may provide authorization. The findings of an autopsy will be furnished to officers conducting the criminal investigation of the case.

The act contained no appropriation for financing the office of State Medical Examiner. Instead, it provides that a staff member of the medical school shall serve in this capacity, with compensation and expenses provided through the school. Also, the act specifies that other necessary expenses shall be covered from appropriations of the State Bureau of Investigation and the State Department of Health.

Senate Bill 399

Representative Baggett narrowly missed getting the Professional Corporation Act passed when he initially introduced it in the House as H.B. 1024. When the measure was snagged on a parliamentary point, he sought the help of Senator Charles Wilson of Sayre, who re-introduced it in the Senate as S.B. 399. Baggett and Wilson, with the help of Senator Denzil Garrison of Bartlesville, and others, successfully guided the bill to legislative approval.

One of the objectives of the act is to provide tax equity to professional men, by permitting them to incorporate the business aspects of their practices. Most tax benefits arise because the physician is considered an "employee" of his own corporation. Physicians, osteopaths, chiropractors, podiatrists, optometrists, veterinarians, architects and attorneys are eligible.

Professional men may incorporate by filing Articles of Incorporation with the Secretary of State. These corporations may only be established for the purpose of rendering one specific type of professional service, with the further proviso that only one principal office may be maintained.

All shareholders of the corporation must be duly licensed in their profession, and the practitioners are still held responsible for their professional acts. These provisions make the act ethically acceptable by American medicine.

Profits and Pitfalls

Representative Baggett, an Oklahoma City tax attorney, expresses pride in offering the tax benefits and other advantages to the professions, but cautions against arbitrary conversion to corporate status without having sound legal counselling.

"Through the Professional Corporation Act, we sought to give professional persons the advantages of the corporate form of business," Baggett said, "and I would be extremely disappointed if it was misused to the detriment of someone it was designed to benefit."

On the profit side of the ledger, the big news to physicians is the tax benefits to be derived. Pertinent tax opportunities, as reported by Baggett, are:

1. *Pension and Profit Sharing Plans.* Through the corporation a physician can invest, *tax free,* up to 15% of his professional income in a qualified retirement plan. The retirement fund is invested and the investment income is tax free. Upon retirement, the physician receives this fund in installments at much lower tax rates—or he can take it in a lump sum at capital gains rates. If he dies and his part of the fund goes to a named beneficiary, there is no estate tax.

2. *Life Insurance.* The professional corporation may purchase group life insurance, payable to any beneficiary designated by the physician. The premiums are deductible by the corporation and are not taxable to the physicians.

3. *Wage Continuation Plans.* The corporation can pay the physician's regular compensation while he is disabled. Payments are deductible by the corporation—and up to $100.00 a week is tax free to the physician.

4. *Medical, Accident and Disability Insurance.* Group medical, accident and disability insurance premiums are deductible by the corporation and are not taxable to the physician.

5. *Death Benefits.* Upon the death of a physician, the corporation can deduct up to $5,000.00 paid to his widow as a death benefit. The widow receives the payment income tax free.

6. *Repurchase of Interest on Death or Retirement.* Upon a physician's retirement, the professional corporation may redeem his stock. The physician would receive capital gains treatment. Upon a physician's death, the corporation can repurchase his stock at current value and there is no capital gains tax.

7. *Double Taxation Avoided.* If there are ten or less shareholders in the professional corporation, they may elect to have its income taxed to the shareholders, after making the deductions described above. This avoids the double taxation of corporate income.

Other advantages include freedom from the joint liability of co-practitioners. Physicians will only be liable to the extent of their corporate investment in the case of litigation against others.

Burton Named To High AMA Post

A past-president of Oklahoma State Medican Association, John Flack Burton, M.D., was elected Chairman of the American Medical Association's Council on Medical Service during the AMA's annual meeting, held June 25-30 in New York.

The Oklahoma City plastic surgeon steps into the role with an extensive background of experience in organized medicine. In addition to being state president in 1957, he has served Oklahoma in the AMA House of Delegates.

Doctor Burton has been a member of the Council, a powerful division of the AMA, since 1956. During his first year, he assumed the chairmanship of the Council's Committee on Indigent Care. In the latter capacity, he has taken part in many regional conferences on aging, has been appointed to the Medical Advisory Committee of the Department of Health, Education and Welfare's Bureau of Public Assistance, and has been active in the AMA's program for implementing the Kerr-Mills legislation.

The Committee on Indigent Care has recently produced two major publications: "Guides for Drug Expenditures for Welfare Recipients" and "Financing Medical Care for the Aged."

Since 1959, Doctor Burton has served as a member of the Tripartite Liaison Committee between the AMA, the American Hospital Association and the American Nursing Home Association, a group concerned with institutional care of the chronically ill and aged.

Big Job

The Council on Medical Service was created in 1943 as a standing committee of the House of Delegates. It was initially responsible for the coordination of all AMA medical care activities, the improvement of public relations, and the establishment of liaison with the nation's capitol.

Since its beginning, however, new AMA departments were created for public rela-

tions and legislation, and the Council began developing a more comprehensive program in the medical care field. It still remains as one of only four committees which report directly to the House.

The Council is presently comprised of committees on Medical Facilities, Indigent Care, Maternal and Child Care, Federal Medical Services, Aging and Insurance and Prepayment Plans. As Council chairman, Burton will be in charge of more than 45 physicians who serve on these committees, and will serve himself as an ex-officio member of these groups.

He will also become a member of the House of Delegates, though without voting privileges.

Current Activities

The Council and its committees are engaged in a greater variety of activities than any other AMA division. Among those of current interest are: Physician-Hospital Relationships; Expansion and Improvement of Voluntary Prepayment Plans (both Blue Shield and private insurance carriers); Group Practice; Aging; Physician Placement Service; Veterans Medical Affairs; Perinatal Mortality and Morbidity; Nursing Home Care; Medicare and the Federal Employees Health Benefit Act; and, Insurance Programs, such as professional liability, disability and major medical plans.

Future Plans

According to Doctor Burton, the Council will direct its future efforts toward keeping abreast of changing trends in the economic and social aspects of medical care.

"We will continue to work toward improved relationships between physicians and other organizations," he said, "trying to bring about educated understanding from both sides of any issue." He predicted that the impact of labor and government will create a constantly changing picture in the provision of medical care. "The Council will be continually developing guidelines," Burton said, "whereby physicians can work as effectively as possible without permitting a deterioration in the quality of medical care."

Phelps Leads Aces, Deuces

Shown congratulating Doctor Phelps (left) is outgoing President of the Aces and Deuces, Charles J. Ashworth, M.D., Providence, Rhode Island.

Malcom E. Phelps, M.D., El Reno, was elected President of the Aces and Deuces organization during the American Medical Association's 1961 annual meeting in New York.

Aces and Deuces was formed nearly a decade ago by Delegates, Alternate Delegates and Executive Secretaries of state medical societies which were entitled to only one or two representatives to the AMA House of Delegates. The purpose of the organization is simply to enable small state societies to band together socially and thereby be in a position to entertain the AMA's full House of Delegates.

Larger states routinely maintain elaborate hospitality suites at AMA meetings, and several of them singularly sponsor luncheons and receptions for the House of Delegates. To repay such courtesies and to provide the financial wherewithal to host the Delegates, the Aces and Deuces was born.

Doctor Phelps succeeds Charles J. Ashworth, M.D., Providence, Rhode Island. The present secretary-treasurer is Frank J. Holroyd, M.D., Princeton, West Virginia.

The honor bestowed upon Doctor Phelps is only the most recent of many other awards of recognition, including the presidency of the American Academy of General Practice. He is presently serving the Oklahoma State Medical Association as Delegate to the A.M.A.

Endocrine Society Honors Turner

Henry H. Turner, M.D., Oklahoma City endocrinologist, was recently honored at the 43rd Annual Session of the Endocrine Society which was held at the Hotel Biltmore in New York City.

Vice-President of this international group of some 1,300 members in 1937-38, and a member of the Council from 1938-41, Doctor Turner has served as Secretary-Treasurer of the organization since 1941.

The special award, second ever made by the society, included a certificate of recognition which read in part ". . . . for outstanding contributions to the advancements and dissemination of knowledge of endocrinology and especially in appreciation of his great labors on behalf of the Endocrine Society." In addition, he was presented a leather-bound testimonial of over 100 letters of regard and appreciation from members and friends all over the world.

Long active in medical circles, Doctor Turner served as President of the Oklahoma State Medical Association in 1940-41.

In 1959, he was named the Schering Scholar for his outstanding contributions to the field of endocrinology.

The same year, he was installed as President of the National Society of Nuclear Medicine, a world-wide organization with a membership of over 1,200 physicians, dentists, engineers and scientists who represent all areas of the United States as well as eight foreign countries. The purpose of the group is to develop and exchange scientific information in the field of nuclear medicine and to promote research and clarify understanding of related problems.

Among other past honors, Doctor Turner is a former member of the Council of the Southern Medical Association and has held the Presidency of the American Therapeutic Society and the Vice-Presidency of the American Goiter Society. In addition, he was awarded an honorary membership in the National College of Surgeons of Brazil.

Russian Medics to Invade State Fair

Promoters of the Oklahoma State Fair, scheduled for Oklahoma City, September 23-30, recently announced that the Soviet Union will present a huge medical exhibit on Russian medicine.

Arranged through the Cultural Exchange Program of the U.S. Information Agency, the exhibit will cover 5,000 square feet of a fairgrounds building which is labeled "Miracles of Modern Medicine." While few details of Russian plans are available at this time, it is expected that some thirty-five Soviet physicians will staff a display of the latest in Iron Curtain gadgetry.

Russia selected the Oklahoma Fair as one of several exhibit sites allocated to them across the United States. Future cultural exchange plans call for sending an American medical exhibit into Russia.

OSMA to Host

In lieu of preparing a similar and perhaps competing medical exhibit at the fair, the Executive Committee of the Oklahoma State Medical Association elected to propose a tour of Oklahoma's health care facilities for the Russian doctors. Plans are underway to contact the Soviet Union, through proper diplomatic channels, inviting the physicians to stay a day or two extra in Oklahoma as the guests of the OSMA.

If the invitation is accepted, a chartered bus tour will be arranged, whereby the Russians will be able to see the University of Oklahoma School of Medicine, the Oklahoma Medical Research Foundation, various Oklahoma City and out-of-town hospitals, and even browse through private physicians offices.

A group of Oklahoma City physicians is reported to be considering the coordination of a medical display, to be erected in the same building with the U.S.S.R. While the Oklahoma State Medical Association does not plan to sponsor such an activity, a spokesman for the Executive Committee said the OSMA believed its "educational tour" for the Russians would be an effective complement to a fairgrounds exhibit.

Proceedings of the 55th Annual Session of the House of Delegates

of the

Oklahoma State Medical Association

CLOSING SESSION

The Closing Session of the 55th Annual Meeting of the House of Delegates of the Oklahoma State Medical Association was called to order by the Speaker of the House, Marshall O. Hart, M.D., at 8:25 p.m., on May 7, 1961, in the Pompeian Court of the Mayo Hotel, Tulsa.

The Credentials Committee reported a quorum present.

Doctor Wilkie D. Hoover, Chairman of the **Reference Committee on Legislation and Public Policy** gave the following recommendations concerning resolutions referred to the committee for consideration:

RESOLUTION NUMBER 2: (Copy attached)

Upon the recommendation of the reference committee, it was moved and seconded that this resolution be temporarily rejected. The motion carried.

RESOLUTION NUMBER 10: (Copy attached, as approved)

The reference committee recommended that the fourth paragraph of this resolution be amended to read "BE IT RESOLVED, that the Legislative Committee of the Oklahoma State Medical Association be directed to support Senate Bill 291." The committee further recommended that the last paragraph of the resolution be deleted.

It was moved and seconded that the resolution be adopted as amended by the reference committee. The motion carried.

RESOLUTION NUMBER 11: (Copy attached)

Upon recommendation of the reference committee it was moved and seconded that this resolution be adopted as read. The motion carried.

RESOLUTION NUMBER 15: (Copy attached)

Upon recommendation of the reference committee it was moved and seconded that this resolution not be adopted. The motion carried.

RESOLUTION NUMBER 16: (Copy attached)

Upon Council recommendation, and that of the reference committee, it was moved and seconded that this resolution be adopted. The motion carried.

RESOLUTION NUMBER 17: (Copy attached)

Upon recommendation of the reference committee, it was moved and seconded that this resolution be adopted. The motion carried.

RESOLUTION NUMBER 18: (Copy attached)

After a lengthy discussion as to whether or not one state association has the right to oppose the rights of another state association's establishing its own policies, **it was moved and seconded that this resolution be rejected. The motion carried.**

Doctor E. C. Mohler, Chairman of the **Reference Committee on Constitution and By-Laws,** gave the following recommendations concerning resolutions and amendments referred to the committee for consideration: (Amendments are attached, as approved)

AMENDMENT NUMBER 1:

Upon the recommendation of the reference committee, it was moved and seconded that this amendment be made in the constitution and by-laws. The motion carried.

AMENDMENT NUMBER 2:

Upon the recommendation of the reference committee that the word "President" be revised to read "President-Elect," and that the amendment be approved with this one revision, it was moved and seconded that the revised amendment be approved. The motion carried.

AMENDMENT NUMBER 3:

Upon recommendation of the reference committee, it was moved that this amendment be made in the constitution and by-laws. The motion was duly seconded and carried.

AMENDMENT NUMBER 4:

Upon recommendation of the reference committee, it was moved and seconded that this amendment to the constitution and by-laws be approved. The motion carried.

AMENDMENT NUMBER 5:

Upon recommendation of the reference committee, it was moved and seconded that this amendment to the constitution and by-laws be approved. The motion carried.

AMENDMENT NUMBER 6:

Upon recommendation of the reference committee, it was moved and seconded that this amendment to the constitution and by-laws be approved. The motion carried.

AMENDMENT NUMBER 7:

Upon recommendation of the reference committee, it was moved and seconded that this amendment to the constitution and by-laws be approved. The motion carried.

AMENDMENT NUMBER 8:

Upon recommendation of the reference committee, it was moved and seconded that this amendment to the constitution and by-laws be approved. The motion carried.

AMENDMENT NUMBER 9:

Considerable discussion was engendered regarding the portion of this proposed Amendment No. 9 to re-

(Continued on Page 472)

American Fracture Association Plans Fall Meeting

The American Fracture Association's 22nd Annual Meeting will be held September 16 through 23 in Washington, D.C. and Williamsburg, Virginia.

Following the Board of Governors Executive meeting and registration on September 16, a one-day postgraduate course in Orthopedic Surgery and Fractures will be held on September 17 in the Gorman Auditorium, Georgetown University School of Medicine. Six hours credit, Category 1, by the American Academy of General Practice will be granted for this course. A $10.00 tuition fee will include lunch and bus transportation.

On Monday, September 18, a three-day scientific program will begin at the Shoreham Hotel. Many prominent men in the field of fractures will speak on diversified subjects. Both scientific and commercial exhibits have been planned for the physicians attending. This course is acceptable for Category 2 credit by the AAGP.

Harsha to Speak

A two-day trip to Williamsburg, Virginia for another scientific program has been arranged for September 21 and 22. Among the guest speakers will be William N. Harsha, M.D., Clinical Assistant in Orthopedic and Fracture Surgery at the University of Oklahoma School of Medicine.

Special entertainment has been outlined for the ladies attending with their husbands.

Detailed information may be obtained by writing to Milton C. Cobey, M.D., 1726 1 St., N.W., Washington, D.C.

Brown, Burton Reappointed To HEW Committee

Two past-presidents of the Oklahoma State Medical Association were reappointed in July to continue service on an important committee of the Department of Health, Education and Welfare. Walter E. Brown, M.D., Tulsa, and John F. Burton, M.D., Oklahoma City, will serve as professional consultants to the HEW's Board of Public Assistance.

Have You Heard?

JAMES R. RHYMER, M.D., a native of Leedey, Oklahoma and a graduate of Pittsburgh School of Medicine, has opened offices in the Lingenfelter-Cunningham Clinic in Clinton.

Recently appointed County Superintendents of Health are: JERRY E. KING, M.D., Holdenville, Hughes County; JOSEPH S. RAFF, M.D., Madill, Marshall County; DAVID M. EGGENBERG, JR., M.D., Davis, Murray County; ROBERT N. HONEA, M.D., Muskogee, Muskogee County; RICHARD A. CONLEY, M.D., Watonga, Blaine County; RAY E. SPENCE, M.D., Pauls Valley, Garvin County; C. W. ARRENDELL, M.D., Ponca City, Kay County; and R. H. MAYBERRY, M.D., Wewoka who will be District Superintendent of Health of Seminole and Haskell Counties.

A graduate of the University of Oklahoma School of Medicine, BILLY DALE DOTTER, M.D., has joined C. H. WILLIAMS, M.D., in partnership at the Okeene Clinic. Doctor Dotter has recently completed a residency in surgery at Mercy Hospital in Oklahoma City.

MERLE D. CARTER, M.D., an OU Medical School graduate, has joined the staff of the Waynoka Clinic.

CONRAD MARKERT, M.D., a native of Muskogee and graduate of the University of Oklahoma School of Medicine, is now associated with the Anadarko Clinic.

Southern Oklahoma group desires young general practitioner for association, leading to partnership.

Write Key B, The Journal
P.O. Box 9696
Oklahoma City, Oklahoma

Deaths

Donald W. Branham, M.D.
1900-1961

Donald W. Branham, M.D., a member of the Editorial Board of *The Journal* of the Oklahoma State Medical Association since 1958, died in Corpus Christi, Texas, June 20, 1961.

Born in Evansville, Indiana in 1900, Doctor Branham graduated from the University of Oklahoma School of Medicine in 1925. He took postgraduate work in urology at the University of Pennsylvania and Newark City Hospital, New Jersey. Except for his service as a Commander in the Navy during World War II, he had practiced in Oklahoma City since 1932.

Since 1935, he had served on the staff of the OU Medical School and was named Chairman of the Department of Urology in 1954. At the time of his death, he was Head of the Department of Urology at the Veterans Administration Hospital in Oklahoma City.

Doctor Branham was active in medical circles, having served on the American Board of Urology; as President of the Oklahoma County Medical Society in 1954; and, in addition to his place on the Editorial Board of *The Journal*, he had been Editor of *The Bulletin* of the county society.

He was a member of the American Urological Association, the Oklahoma City Urological Association and the Oklahoma Health Council.

Other activities included membership on the Oklahoma City Board of Appeals for charity organizations, organizer and Vice-President of the Visiting Nurses Association and a member of the American Medical Writers Association.

A leader in Oklahoma City's Great Books program, Doctor Branham was interested in many civic organizations, including his position as violinist in the original Oklahoma City Symphony.

Ray M. Balyeat, M.D.
1889-1961

Ray M. Balyeat, M.D., 72-year-old Oklahoma City physician, died July 2, 1961.

A native of Arkansas City, Kansas, Doctor Balyeat graduated from the University of Oklahoma School of Medicine in 1918, where he later became Associate Professor Emeritus of Medicine.

A Diplomate of the American Board of Internal Medicine, he had served as national President of the American Association for the Study of Allergy, an organization which later became the American Academy of Allergy.

Doctor Balyeat was the author of several reference books on allergies and migraines.

C. E. Calhoun, M.D.
1878-1961

Sand Spring's first doctor, C. E. Calhoun, died June 11, in Sand Springs.

Born in Greensboro, Alabama in 1878, Doctor Calhoun received his medical degree from Maryland Medical College in 1903. He came to Sand Springs in 1910 as the first physician for the Sand Springs Orphans' Home and the Sand Springs Railroad. In addition to these activities, he maintained his private practice.

A participant in both civic and religious activities, his practice was interrupted only by eighteen months service with the army during World War I.

In 1953, the Oklahoma State Medical Association honored Doctor Calhoun for over half a century of service to the medical profession with the presentation of a Fifty-Year Pin. Before his retirement in 1957, he again received tribute from the association when he was awarded a Life Membership.

Auxiliary News

Convention Impressions

Mrs. Pat Fite, Sr., our State President, reports A.M.A. convention in New York was stimulating, but swelteringly so:

"The Convention was huge, formal and impressive. The first day we voted to give $10,000 to the A.M.E.F.; $10,000 to A.M.A. for loans for education and scholarships; and $1,000 to *Today's Health.* These gifts were voted from the A.M.A. Auxiliary's unrestricted reserve fund.

"When the states gave their reports, Oklahoma was one of the two states to receive spontaneous applause. (We shall have to wait until Fall Conference to find what particular project or projects were responsible for the accolade.)

"The Memorial Service was beautiful and dignified.

"The planned entertainments were beautifully presented. The tea honoring Mrs. Mackersie and Mrs. English was held at the United Nations Building. Most of us planned our time so that we could vote first, make the guided tour of the building, then attend the tea. The luncheon honoring the Past Presidents was called 'Manhattan Serenade' and was held in the Palm Terrace at the Hotel Roosevelt."

Did You Miss A.M.A.?

Since most of us were not among the 2,500 Auxiliary members attending A.M.A., we appreciated coverage on T.V., newspapers, *Life,* and *Time.* Some one from our unsophisticated state should write an assuring note to the editorialist of *The New Yorker* comments, explaining several things: doctors *are* people—and patients were being cared for by some doctor at home. Maurine said Dr. Fite was one of the doctors "who exhibited great variety in dress and appearance" by wearing a gay madras jacket; New York obviously has not heard of the advantages of air conditioning.

Medium and Heavy

If you are already bored with the stack of "light" summer reading you saved during the winter, the current crop of periodicals will boost your interest. Don't miss the mid-July issue of the *Post,* covering the wonderful service of our Oklahoma doctors to the Jordanian area: *Doctors in the Desert.*

Each Civil Defense Chairman should recommend Major de Seversky's *America—Too Young to Die!* A condensed version is currently running in one of the state newspapers. The Major attempts to explain public apathy, and he constantly rephrases what Velma Woodward has been telling us the past two years.

One of the finest supplements ever carried by *The Atlantic* is in the July issue: *Psychiatry in American Life;* Its effect on Medicine, Writing, Religion, Art, Children, and Morals. A panel on this issue would provide a stimulating program for your Mental Health Chairman to consider. For excellent background material, we also recommend Dr. Nina Ridenour's book: *Mental Health in the United States,* a 50-year history.

For pertinent facts covering almost every field of our interests, be sure to start filing comments of Dr. Edward R. Annis, who joined the editorial staff of *Medical Economics* in July. After reading his articles, seeing him debate Walter Reuther, and listening to his excellent speech in Tulsa in the spring, many of us find him an excellent and quotable source for the many questions we are asked.

25 YEARS AGO

Articles published in *The Journal* of the Oklahoma State Medical Association, August, 1936.

Esophageal Diverticula

R. M. Howard, M.D., F.A.C.S.
Professor of Surgery, University of Oklahoma

The first mention of an esophageal diverticulum which appears in the literature was made by Ludlow in 1746, when he described what we now term a pulsion diverticulum of the esophagus. Rokitansky in 1840 divided esophageal diverticula into the pulsion and traction types.

The pulsion type, the one which we are attempting to discuss, is not a true diverticulum, but rather a herniation of the mucous, and submucous coats. Killian and Keith have demonstrated that they originate between two definite parts of the inferior constrictor muscle, i.e. between the transverse lower constrictor fibers, and the circular or oblique fibers of the constrictor inferior pharyngis muscles that go to make up the criopharyngeous muscle. While this statement is usually accepted, there has recently been evidence produced showing that this may be incomplete.

The traction type of diverticula are true diverticula in that the sac contains all of the coats of the esophagus. They occur almost always in the thoracic portion of the esophagus and result from cicatrical contraction of inflamed lymph glands, which by true traction pull the walls of the esophagus outward, causing a diverticulum of varying size to develop. They usually are small, transverse in relation to the esophagus, and cause but little trouble, as the neck of the sac is rarely narrow, and because the walls contain the muscular coats of the esophagus they tend to empty readily.

Two other types have been described, a congenital type which is related to branchial fistula, and a lateral diverticulum described by Moynihan which arises from a gap below the borders of the cricopharyngeus and the fibers of the esophagus. These two types are very rare.

The pulsion type of diverticulum, with which we are at present particularly interested, is entirely different from the others. It is sometimes called, because of its origin, a pharyngo-esophageal diverticulum. Its site of origin is almost a fixed point. Its progress is constant, and its anatomy and relation to surrounding structures varies but little. It occurs probably more frequently than we realize; two hundred and seventy-six cases are reported at the Mayo Clinic prior to 1933; thirty-five are reported by Lahey, and seventy-nine reported by Shallow from the Jackson Clinic. It is more frequent in men than women, about five to one. It is observed usually between fifty and seventy years of age, but may be found earlier in life. The youngest in our series was sixty-five and the oldest seventy-eight years.

TO SUMMARIZE

The age incidence of our cases were 67-73-78-74-77-65. Average age 72.3 years. Symptoms were present from four months in one case to twelve years in another. The average time symptoms were present was 4.33 years.

The symptoms conformed to the first stage in one case; to the second stage in one case and to the third stage in five cases. Two of these cases had gone into extreme dehydration and starvation.

The five cases operated made uneventful recovery without complications, and were entirely relieved of the distressing condition.

Letter to The Editor

The Editorial Board
Gentlemen:

I have reviewed with great interest the May 1961 issue of the *Journal* of the Oklahoma State Medical Association which has been devoted in its entirety to the subject of disaster medical care. Because of its completeness in full coverage of all aspects of disaster preparedness, I am confident that it will become a valuable resource document for State and local medical associations in their planning for health mobilization activities.

We are grateful for the opportunity afforded Mr. Jerrold M. Michael, Chief, Training Branch of our Division of Health Mobilization, to contribute to this issue the paper on "Continuing Education in Health Mobilization."

The Editorial Board of the *Journal* and its staff, as well as the officers of the Oklahoma State Medical Association, are to be complimented on their fine contribution to the literature in this most important field of medicine.

Sincerely yours,
LUTHER L. TERRY, M.D.
Surgeon General

PHYSICIAN PLACEMENT

Anesthesiology

Richard S. Dillman, M.D., 529 Fifth Street, Ann Arbor, Michigan; age 35; married; University of Michigan, 1956; board eligible.

General Practice

George Rosenthal, M.D., John Peter Smith Hospital, Fort Worth 4, Texas; married; University of Arkansas Medical School, 1960; available immediately.

Leonard W. Rozin, M.D., 2740 N.W. 21st St., Oklahoma City; age 33; married; University of Kansas, 1959; now completing general practice residency at University Hospital; desires association in Oklahoma City; available July 1, 1961.

John Richard Smith, M.D., U.S.A.F. Hospital, APO 633, New York City, New York; age 29; married; University of Oklahoma School of Medicine, 1957; available September, 1961.

Irving Teague Staley, M.D., 4207 Givens Avenue, Memphis 17, Tennessee; age 32; married; University of Tennessee, 1960; available July 1, 1961.

Joe Allen Stewart, M.D., Box 337, Fountain Inn, South Carolina; age 36; married; University of Oklahoma, 1949; available immediately.

E.E.N.T.

August L. Stemmer, M.D., 20th Station Hospital, APO 696, New York, N.Y.; age 32; married; Harvard Medical School, 1953; board certified; Available May 1, 1961.

Industrial

A. G. Dandenault, M.D., 735 Lundvall, Rockford, Illinois; age 60; single; University of Manitoba Medical College, 1926; prefers general practice with some surgery; available immediately.

Frederic O. Epp, M.D., 110 West 6th, Augusta, Kansas; age 54; married; University of Kansas, 1938; desires industrial or governmental work; available immediately.

Internal Medicine

Spencer E. Berry, M.D., 13630 Flynn, Le Puente, California; single; University of Oklahoma, 1950; board eligible; available now.

James Stanford Haimsohn, M.D., 3340 Poplar Avenue, Memphis, Tennessee; age 43; married; University of Tennessee, 1942; board certified: available 90 days.

Donald Sinton Hall, M.D., 8283 Marlow, Detroit 28, Michigan; age 33; married; University of Cincinnati, 1955; available August, 1961.

Allen Bert Malnak, 1015½ Brown Street, Evanston, Illinois; age, 32; married; University of Illinois, 1954; board eligible; available June or July, 1961.

Locum Tenens

University of Oklahoma graduate desires locum tenens during the months of August or September, 1961. Contact R. A. Yeakley, M.D., c/o St. John's Hospital, 1923 South Utica Avenue, Tulsa, Oklahoma.

University of Oklahoma graduate desires locum tenens, from mid-September, 1961 to mid-June, 1962. Contact Key A, The Journal Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City.

John B. Tipton, M.D., 326 North Ingalls, Ann Arbor, Michigan; second year of general surgery resident in Ann Arbor, Michigan; desires 3 to 4 weeks of locum tenens in Northeastern Oklahoma. Highest recommendation available.

Obstetrics and Gynecology

Philip Tabor Bennett, M.D., Quarters 739A, Maxwell A.F.B., Montgomery, Alabama; age 31; married; University of Texas Medical School, 1954; board eligible; available July 1961.

Robert Russell Fahringer, M.D., 1506 13th Street, Bedford, Indiana; age 38; married; Jefferson Medical College, 1953; board eligible; available immediately.

Richard W. Fenaughty, M.D., 95 Hart Street, New Britain, Connecticut; age 31; married; State University of New York, 1957; available July 1961.

Joseph W. Herbert, M.D., 915 North 1st Street, Temple, Texas; age 41; married; Southwestern Medical School, Dallas, 1945; board certified; available immediately.

Robert Cecil Koehn, Jr., M.D., 125 A Jupiter Street, Wichita Falls, Texas; age 33; Medical School, University of Tennessee; Board certified; available September, 1961.

Michael Lado, M.D., 999 Monroe Ave, Apt. 707, Memphis, Tennessee; age 31, married; University of Pittsburgh, 1955; available July, 1961.

Robert B. Williams, M.D., 27 Normandy Road, Auburndale 66, Massachusetts; married; age 30; Tulane University, 1955; board certified; available July 1, 1961.

John J. Zadworny, M.D., 419 South Waccamaw Street, Columbia, South Carolina; age 30; married; University of Manitoba, 1955; board eligible; available immediately.

Orthopedics

Sheldon Roger, M.D., 1185 Holly Street, Denver, Colorado; age 31; married; Indiana University, 1953; board eligible; available July 1, 1961.

George Walter Shaw, M.D., 6135 Walmer, Mission, Kansas; age 32; University of Texas, Southwestern Medical School, 1953; available, December, 1961.

Emmet J. Thorpe, M.D., 6811 Stockton Drive, Knoxville, Tennessee; age 32; married; George Washington University School of Medicine, 1951; board certified; available immediately.

Perry Merrill White, Jr., M.D., 3338 Tanglewood Drive, Augusta, Georgia; age 35; married; Baylor University College of Medicine, 1953; board eligible; available August, 1961.

Psychiatry

William L. Sherman, Jr., M.D., 201 East Kirby, Detroit 2, Michigan; age 38; single; Wayne State University College of Medicine, 1947; board eligible; available immediately.

Mary Eichhorn, M.D., 501 Fourth Street, Garden City, Kansas; age 38; single; University of Kansas, 1945; board certified; available immediately.

Murphy Mayo Sims, M.D., 3932 Ruskin Street, Houston, Texas; age 55; Louisiana State, 1936; board eligible; available immediately.

Preventive Medicine

Robert E. Jewett, M.D., 2820 Fairway Drive, Birmingham, Alabama; age 52; widower; Indiana University, 1934; board certified; desires administrative practice; available immediately.

Radiology

Quentin T. Brooks, M.D., 6922 Edgemoor Drive, Houston, Texas; age 40; married; Oklahoma University School of Medicine, 1953; board certified; available immediately.

Edward M. Sipple, M.D., 5935 Chinquapin Parkway, Baltimore 12, Maryland; age 40; married; University of Maryland, 1951; board eligible; available July 1, 1961.

William John Super, M.D., 55 Poplar Court #4, Buffalo, New York; age 38; Saint Louis University Medical School; board eligible; available immediately.

Surgery

David S. Bachman, M.D., 301 North 2nd St., Allentown, Pennsylvania; age 38; married; University of Buffalo, 1947; board certified general surgery; specilaty, broncho-esophagology and thoracic surgery; available immediately.

David B. Dolese, M.D., 833 South Washington Ave., Holland, Michigan; age 43; married; University of Michigan, 1943; board certified; available immediately.

Charles Richard Fielder, M.D., 158 Bay State Road, Boston, Massachusetts; age 35; single; University of Arkansas, 1954; board certified; available August, 1961.

Urology

Joseph N. Ward, M.D., 480 Emory Circle, Atlanta 7, Georgia; age 35; married; University College, Dublin, Ireland, 1949; board eligible; available immediately.

MISCELLANEOUS ADVERTISEMENTS

WILL BUILD offices to suit tenant on desirable site across from new Bethany YMCA, 6708-6720 N. W. 32 St. Ample parking. Population of 50,000 surrounding area. Contact Arnold H. Yocum, 215 S. W. 8th St., Bethany, Okla. Call WH 7-7768.

PEDIATRIC RESIDENCY VACANCY at first year. Fully approved program in new two million dollar Children's Hospital in teaching medical center with University affiliation. State law requires U.S. citizenship and Oklahoma license (application could be made anytime). Stipend of $200 with full maintenance. Address inquiries to Leon Horowitz, M.D., care of Office of Graduate Education, Hillcrest Medical Center, Tulsa 20, Oklahoma.

PROFESSIONAL BUILDING for sale or lease two blocks from new Midwest City Hospital. Also, would build to suit tenant. Space for four M.D.'s. Contact Key D, The Jornal of the Oklahoma State Medical Association, P.O. Box 9696, Oklahoma City.

FOR SALE: Good used equipment. C. P. Taylor, M.D., 1201 East 5th, Ada, Oklahoma. FE 2-4424.

OPPORTUNITY for general practitioner in Maud, Oklahoma, population of 1,400 and 6,000 in area. Located 15 miles from Seminole Hospital and 18 miles from new Pottawatomie County Hospital with good roads to each. Town was previously staffed by two physicians. Offices and utilities are free. Contact R. M. Snelson, Phone 443 or 208, P.O. Box 1277, Maud, Oklahoma.

LOCUM TENENS DESIRED. Former Tulsan now in second year of general surgery residency in Ann Arbor, Michigan desires 3-4 weeks of locum tenum in Northeastern Oklahoma. Highest recommendation available. Reply: John B. Tipton, M.D., 326 N. Ingalls, Ann Arbor, Michigan.

PATHOLOGY RESIDENCIES AVAILABLE, fully approved 4 years (PA-CP). 700 bed hospital. 250 autopsies, 8,000 surgicals, 250,000 clinical laboratory tests. Staff of three full-time board certified pathologists. Full time bacteriologist. Full time Director of Medical Education. Radioisotope laboratory. Electron microscope available. Full maintenance (room and board) plus stipend from $200 monthly on. Apply Leo Lowbeer, M.D., Hillcrest Medical Center, Tulsa 20, Oklahoma.

55th Annual Meeting

(Continued from Page 465)

quire two-thirds majority vote to pass an amendment to the by-laws. **The motion was made by Doctor Louis H. Ritzhaupt and duly seconded that this portion of the proposed change in the by-laws be stricken. The motion carried.**

RESOLUTION NUMBER 9: (Copy attached)

Upon recommendation of the reference committee, it was moved and seconded that this resolution be adopted as read. The motion carried.

RESOLUTION NUMBER 19 (Copy attached)

Upon recommendation of the reference committee, it was moved and seconded that this resolution, written and proposed by the reference committee, be adopted. The motion carried.

Doctor Malcom E. Phelps, Chairman of the **Reference Committee on Miscellaneous Business**, gave the following recommendations concerning resolutions referred to the committee for consideration.

RESOLUTION NUMBER 1: (Copy attached, as approved)

The reference committee offered a substitute resolution for approval. **It was moved and seconded that this substitute resolution be adopted. The motion carried.**

RESOLUTION NUMBER 3: (Copy Attached)

Doctor Phelps reported that it was the opinion of his committee that this resolution was mechanically impossible, and recommended that it not be adopted.

Upon this recommendation from the reference committee, it was moved and seconded that this resolution not be adopted. The motion carried.

RESOLUTIONS NUMBER 6 and 7: (Copy attached, as approved)

The reference committee offered a substitute resolution to replace Resolutions No. 6 and 7 for approval.

It was moved and seconded that this substitute resolution be adopted. The motion carried.

RESOLUTION NUMBER 13: (Copy attached, as approved)

The reference committee recommended adoption of this resolution. However, Doctor Walter E. Brown pointed out that, as written, the resolution recommended moving the winter meeting of the AMA to different sites around the country and that this would be an expense that the resolution was intended to eliminate. Doctor Joe Duer concurred in this observation. **Doctor Brown moved that the section of the resolution referring to places of meeting be stricken. The motion was seconded by Doctor Duer and carried.** The amended RESOLUTION is submitted as corrected and as adopted by the House of Delegates.

Doctor Joe L. Duer, Chairman of the **Reference Committee on Insurance and Medical Service**, gave the following recommendations concerning resolutions referred to his committee for consideration.

RESOLUTION NUMBER 4: (Copy attached)

The committee recommended that the second resolve in the resolution be eliminated and that the word "additional" be stricken from the third resolve in the resolution. **Doctor Walter E. Brown raised the point that such a resolution was impractical at this time and moved that the resolution be postponed indefinitely. The motion was duly seconded and carried.**

RESOLUTION NUMBER 5: (Copy attached, as approved)

The committee recommended a substitute resolution. **It was moved and seconded that this substitute Resolution No. 5 be adopted. The motion carried.**

RESOLUTION NUMBER 8: (Copy attached)

Although the reference committee recommended approval of this resolution, Doctor Walter E. Brown pointed out difficulties in implementing such a resolution and the expense that would be involved if the intent of the resolution was carried out. He reminded the delegates that there is already a Liaison Committee between the Health Department and the Association for review of nursing home problems. **Doctor Brown moved that consideration of this resolution be indefinitely postponed. The motion was seconded and carried.**

RESOLUTION NUMBER 12: (Copy attached)

The recommendation of the committee was that a substitute resolution be adopted in place of this Resolution No. 12. **It was moved and seconded that this substitute resolution be adopted. The motion carried.**

RESOLUTION NUMBER 14: (Copy attached)

Upon the recommendation of the committee, it was moved and seconded that this resolution not be adopted. The motion carried.

Doctor Hart announced that the next order of business would be the election of officers. He stated that there would be no further nominations for offices in the Oklahoma State Medical Association. He explained that the Constitution provided that nominations must be made during the Opening Session of the Annual Meeting of the House of Delegates. This ruling evoked considerable discussion, but Doctor Hart did not change the ruling and referred to the particular section in the Constitution and By-Laws which provides for this procedure.

The first office to be filled was that of PRESIDENT-ELECT. Doctor J. Hoyle Carlock was nominated in the Opening Session. **It was moved and seconded that Doctor Carlock be elected by acclamation. The motion carried. unanimously.**

The next office was that of VICE-PRESIDENT. **It was moved and seconded that Doctor Peter E. Russo, nominated during the Opening Session, be elected by acclamation. The motion carried unanimously.**

Doctor Hart announced that the next office to be elected was that of DELEGATE TO THE AMA and announced the names of Doctor R. Q. Goodwin and Doctor Malcom E. Phelps as those nominated during the Opening Session. It was announced that vote would be by ballot and the Tellers were requested to come forward.

Following the vote and tabulation, Doctor Hart announced that Doctor Malcom E. Phelps was elected to succeed himself as DELEGATE TO THE AMA.

The next office to be elected was that of ALTERNATE DELEGATE to the AMA. Doctor Richard H. Burgtorf and Doctor Thomas C. Points were announced as those nominated during the Opening Session. It was announced that the vote would be by ballot and the Tellers were again requested to come forward. **When the votes had been duly accepted and tabulated, Doctor Hart announced that Thomas C. Points, M.D., was elected as ALTERNATE DELEGATE TO THE AMA.**

Doctor Charles Wilbanks, after being recognized by the Speaker, moved that the House of Delegates authorize Doctor Thomas C. Points to go to the next AMA meeting in the event that the incumbent Alternate, Doctor R. Q. Goodwin, is unable to go because of his health. The motion was duly seconded and carried.

The next order of business was the election of Councilors for Districts No. 3, 6, 9, 10 and 12. The following Councilors were elected by acclamation:

DISTRICT No. 3: Avery B. Wight, M.D., Enid; James Petty, M.D., Guthrie.

DISTRICT No. 6: E. E. Shircliff, M.D., Oklahoma City; Vernon D. Cushing, M.D., Oklahoma City.

DISTRICT No. 9: Burdge F. Green, M.D., Stilwell; F. R. First, M.D., Checotah.

DISTRICT No. 10: Thurman Shuller, M.D., McAlester (To fill the unexpired term of Doctor Paul Kernek).

DISTRICT No. 12: E. M. Gullatt, M.D., Ada; M. E. Robberson, M.D., Wynnewood.

Doctor Hart announced that the last order of business would be the recognition of new officers, and requested that they come to the front.

The 55th Annual Meeting of the House of Delegates of the Oklahoma State Medical Association was adjourned by the Speaker of the House, Doctor Marshall O. Hart, at 11:00 p.m.

REPORTED BY JUNE E. LAWRENCE

AMENDMENTS

1. Amend Chapter VIII, Section 1.00, by deleting the word "and" which appears between the words "By-Laws" and "Grievance," by replacing the word "and" with a comma; and by adding the words "and Executive Committee." to the end of the sentence.

2. Amend Chapter VIII, by inserting a new Section 8.00 and by redesignating the present Section 8.00 as Section 9.00, to-wit:

"Section 8.00 EXECUTIVE. The Council shall appoint the members of the Executive Committee, based upon nominations submitted by the President-Elect."

3. Amend Chapter IX, Section 4.01, by replacing the clause beginning with the word "whose" and ending with the figure "$5,000.00" by the clause "who have restrictive income," and by inserting the words "any physician" between the words "or" and "who" in line five.

4. Amend Chapter IV, Section 11.00, by inserting the word "monthly" between the words "a" and "journal"; and by adding the following to the end of the sentence: "and of an annual membership directory."

5. Amend Chapter VII, Section 1.00, by adding this sentence:

"A DIRECTORY OF THE OKLAHOMA STATE MEDICAL ASSOCIATION, listing names and addresses of all members, and including a copy of the current Constitution and By-Laws of the Association, shall be published annually, not later than April 1st each year."

6. Amend Chapter I, Section 1.00, by inserting the words "who are" between the words "and" and "licensed"; and by adding the following sentence to the end of the section:

"All members of component societies are required to belong to the American Medical Association."

7. Amend Chapter IX, Section 2.01, by deleting the clause beginning with the word "or" and ending with the word "reason."

8. Amend Chapter IX by deleting Section 2.02 in its entirety.

9. Amend Chapter XII, by inserting the following sentence between the second and last sentences:

"An amendment presented at a regular House of Delegates meeting must be presented by a qualified member of the House of Delegates."

RESOLUTIONS

Resolution No. 1

Introduced By: Canadian County Medical Society
Subject: Opposing A.C.S. Action Regarding Surgical Assistants
Referred To: Miscellaneous Business Committee

WHEREAS, the American College of Surgeons has condemned the use of the referring physician in many instances; and

WHEREAS, the family physician is in the best position to understand the total background of the patient, including the current illness, the past history, as well as the social and emotional factors involved, so that he can offer valuable assistance in management of the patient and the family; and

WHEREAS, the family physician is usually well and adequately trained in surgical techniques, so that he can perform his duties as assistant in a competent manner, and thereby he is in a better position to serve his patient in future years; and

WHEREAS, the patient and his family frequently desires and expects that the family physician be present and assist in the surgery, because this promotes confidence and comfort when the patient is facing a surgical ordeal; and

WHEREAS, the Joint Commission on Accreditation

of Hospitals has set up certain standards relating to assistants at surgery;

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association condemns any pronouncement which tends to interfere with the family physician and his relationship to his patients; and

BE IT FURTHER RESOLVED, that the American Medical Association should attempt, through negotiations with the American College of Surgeons, to have this organization adjust its policies to conform with the policies of the Joint Commission on Accreditation of Hospitals.

Resolution No. 2 (Rejected)

Introduced By: Tillman County Medical Society
Subject: Use of Term "Doctor"
Referred To: Legislation and Public Policy Committee

WHEREAS, the lay public in many instances is not cognizant of the difference in medical doctor, doctor of osteopathy and doctor of chiropractic and other designations of those engaged in the practice of medicine; and

WHEREAS, in many communities these differences need to be clarified; and

WHEREAS, the designations need to be further defined.

THEREFORE, BE IT RESOLVED, that the House of Delegates of the Oklahoma State Medical Association pass this resolution and forward it to the Legislative Committee of the Oklahoma State Medical Association for action.

BE IT RESOLVED, that the Medical Laws of Oklahoma be amended as follows: That the use of the term "Doctor" or "Physician" be permitted only by those engaged in the practice of medicine whose credits are transferable to the University of Oklahoma for the awarding of a doctor's degree.

BE IT RESOLVED, that this resolution be presented to the House of Delegates of the Oklahoma State Medical Association at the annual 1961 meeting.

Passed by the unanimous vote of the Tillman County Medical Society on December 22, 1960.

Resolution No. 3 (Rejected)

Introduced By: Tillman County Medical Society
Subject: Advance Council Report to County Societies
Referred To: Miscellaneous Business Committee

WHEREAS, the subject matter of the report of the Council of the Oklahoma State Medical Association to the House of Delegates was lengthy and tedious at the 54th session; and

WHEREAS, the full impact of the report was difficult to evaluate in the time allotted to the reading of the same; and

WHEREAS, it contains controversial issues.

THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association through its House of Delegates at the 55th meeting request, instruct, and order the Council to submit a copy of this report to the individual county societies preceding the annual meeting of the Oklahoma State Medical Association in order that the constituent societies may review this report prior to the meeting of the House of Delegates.

BE IT FURTHER RESOLVED, that this resolution be presented to the House of Delegates of the Oklahoma State Medical Association at the annual 1961 meeting.

Passed by unanimous vote December 22, 1960, by the Tillman County Medical Society.

Resolution No. 4 (Rejected)

Introduced By: Tillman County Medical Society
Subject: Abuse of Welfare
Referred To: Insurance and Medical Service Committee

WHEREAS, abuses occur in the State of Oklahoma in the Aid to Dependent Children Program and the Dependent Care Program; and

WHEREAS, the public has no voice in governing the use of its money in this matter; and

WHEREAS, some means of restraint for the benefit of our free enterprise society need to be devised to combat these abuses since the abuses endanger the mutual incentive for self-sustainment, both of the taxpayer who pays for these welfare services and the recipient who receives these welfare services.

THEREFORE, BE IT RESOLVED that the House of Delegates of the Oklahoma State Medical Association pass this resolution and forward it to the legislative committee of the Oklahoma State Medical Association for action.

BE IT RESOLVED, that the welfare laws of Oklahoma be amended as follows: That the penalty of sterilization be added with the necessary implementation for enforcement for the ADC recipients who give birth to a second child after being placed on the welfare roll because the husband has supposedly abandoned the wife or left home and for the ADC recipient who gives birth to a second child while unmarried. Failure to comply would be sufficient cause for omission from receiving assistance from the State Department of Public Welfare.

BE IT RESOLVED, that an additional amendment to the welfare laws be that a citizens committee composed of taxpaying citizens be appointed from citizens of each county, for each county, by the governor or legislators to scrutinize especially the welfare rolls of the ADC recipients quarterly, but to exclude the Old Age Assistance and the disable rolls, and make quarterly reports of those questionable cases that do not deserve or belong on the welfare rolls.

BE IT RESOLVED, that this resolution be presented to the House of Delegates at the annual 1961 meeting.

Passed by unanimous vote of Tillman County Medical Association on December 22, 1960.

Substitute Resolution No. 5

Introduced By: Tulsa County Medical Society

Subject: Opposition to Service Contracts with Insurance Carriers
Referred To: Insurance and Medical Service Committee

WHEREAS, the right of the physician to fix the amount of his fee in each individual case, based on the type and amount of service rendered and in consideration of other factors, is one of the basic tenets of the medical profession of the United States;

NOW THEREFORE BE IT RESOLVED that the Oklahoma State Medical Association is opposed to the principle of service contracts with insurance carriers; and

BE IT FURTHER RESOLVED, that the Oklahoma State Medical Association restate its complete support of the traditional privilege of the physician to fix the amount of his fee in each individual case.

Substitute Resolution for Resolutions Nos. 6 and 7

Introduced By: Tulsa County Medical Society
Subject: Proposed Increase in AMA Dues

WHEREAS, the Oklahoma State Medical Association feels that the American Medical Association should be called upon to make all possible economies; and

WHEREAS, the members of the Oklahoma State Medical Association feel that the American Medical Association should make attempts to induce all doctors to become active members of the Association; and

WHEREAS, it is necessary for the AMA to adequately represent the medical profession of this country, as well as the state and local medical societies;

NOW THEREFORE BE IT RESOLVED, that if the American Medical Association still requires finances to meet current and future demands, that the Oklahoma State Medical Association will support a necessary increase in dues so that the American Medical Association can more adequately represent the doctors of medicine, and can further medical education in the United States.

Resolution No. 8 (Rejected)

Introduced By: Tulsa County Delegation (Tulsa County Medical Society)
Subject: Proposed Study of Nursing Homes in the State of Oklahoma
Referred To: Insurance and Medical Service Committee

WHEREAS, an increasing number of aged citizens of the State of Oklahoma are now residing in nursing and convalescent homes; and

WHEREAS, it is anticipated that increased benefits of government health care programs for the aged, as well as of private insurance programs, will utilize convalescent and nursing homes to a greater degree in the future, resulting in an increasing number of such homes being established and operating; and

WHEREAS, public complaints have been heard as to conditions of sanitation, operating policies, lack of adequate medical care arrangements, overcrowding, excessive charges, failure to keep records, etc. in some nursing and convalescent homes now in operation.

NOW THEREFORE BE IT RESOLVED, that the President of the Oklahoma State Medical Association appoint a committee of members to make an intensive study of all factors relating to facilities and services offered by convalescent and nursing homes in the State of Oklahoma, compiling such information into a full and detailed report with recommendations for correction of inadequacies, establishment of desirable legislative controls, and blueprinting a liaison program with convalescent and nursing homes to assure adequate medical care for residents of such homes; and

BE IT FURTHER RESOLVED, that this study, report and recommendations shall be presented to the House of Delegates of the Oklahoma State Medical Association no later than the Annual Meeting of 1962 in Oklahoma City; and

BE IT FURTHER RESOLVED, that said study shall in no way reflect upon responsible nursing homes and convalescent homes and their operators who are presently seeking to improve standards of maintenance and operation, nor upon established government agencies entrusted with the administration of existing statutes governing the licensing and inspection of such homes.

Resolution No. 9

Introduced By: Tulsa County Delegation (Tulsa County Medical Society)
Subject: Restatement of Opposition to Corporate Practice of Medicine
Referred To: Constitution and By-Laws Committee

WHEREAS, an alarming trend toward the corporate practice of medicine in Oklahoma, both openly and through subterfuge, and the acceptance by many individual physicians of the undesirable conditions of medical practice imposed therein, has been noted with concern by responsible medical doctors; and

WHEREAS, the corporate practice of medicine is contrary to the established tenets and ethics of the medical profession, tending to exploit both physician and patient, depriving the physician of many of the basic rights of a free system of medical practice, placing the responsibility for professional decisions in the hands of unqualified lay persons in many instances, and encouraging an alien and undesirable type of medical practice of questionable motivation;

NOW THEREFORE BE IT RESOLLVED, that the Oklahoma State Medical Association restate its unqualified opposition to the corporate practice of medicine and admonish its members to adhere to principles of medical practice which shall not deprive them of their basic responsibilities and entitlements as an individual practitioner of medicine; and

BE IT FURTHER RESOLVED, That the component county medical societies in the State of Oklahoma be requested to review all situations relating to and in-

volving the corporate practice of medicine, and that open discussions of this subject be conducted at an appropriate time and place.

Resolution No. 10

Introduced By: Tulsa County Delegation (Tulsa County Medical Society)

Subject: Enactment of a "Good Samaritan" Statute by the Oklahoma State Legislature

Referred To: Legislation and Public Policy Committee

WHEREAS, Physicians rendering medical care at the scene of an emergency, in good faith, should be relieved of liability for civil damages as the result of acts of omission, lack of proper physical facilities for treatment, undesirable conditions for rendering treatment, and other acts performed under the difficult conditions surrounding an emergency; and

WHEREAS, legislation to this effect, popularly known as "Good Samaritan" laws, has been adopted in several states and is now under consideration by the legislative bodies of other states; and

WHEREAS, such legislation would be in the best interests of both the physician and patient, encouraging a fuller measure of emergency medical care;

NOW THEREFORE, BE IT RESOLVED, that the Legislative Committee of the Oklahoma State Medical Association be directed to support Senate Bill 291.

Resolution No. 11

Introduced By: Tulsa County Delegation (Tulsa County Medical Society)

Subject: Legislation to Establish a Medical Examiner System in Oklahoma

Referred To: Legislation and Public Policy Committee

WHEREAS, Senate Bill 81, now pending in the Oklahoma State Legislature, would create a State Medical Examiner System with facilities, personnel and authority to investigate deaths occurring under questionable circumstances; and

WHEREAS, this and similar proposals in the past have been officially endorsed by the Oklahoma State Medical Association as being in the best public interests through the assistance given to the enforcement of law and administration of justice;

NOW THEREFORE BE IT RESOLVED, that the House of Delegates of the Oklahoma State Medical Association reiterate its demand for enactment of legislation creating a State Medical Examiner System by endorsement of Senate Bill 81, requesting that the Legislative Committee follow an intense program of activity to secure the enactment of this bill in the current session of the Oklahoma State Legislature; and

BE IT FURTHER RESOLVED, that in the event Senate Bill 81 fails of enactment in the 1961 session of the Oklahoma State Legislature, that the Oklahoma State Medical Association blueprint a long-range program of legislative activity designed to secure the enactment of an acceptable Medical Examiner System statute in the 1963 session of the Oklahoma State Legislature, said program of activity to be conducted in cooperation with the various component county medical societies.

Substitute Resolution No. 12

Introduced By: Oklahoma County Medical Society

Subject: Determination of Need and Provision of Care to Those over Age 60

Referred To: Insurance and Medical Service Committee

WHEREAS, we the members of the medical profession in the State of Oklahoma feel primarily responsible for the health of its citizens; and

WHEREAS, we hold a unanimous conviction that the most effective and only proper way to discharge this responsibility is by individual and community action; and

WHEREAS, we also believe that through effective and unified utilization of existing local agencies and services no complementary or supplementary resources are needed; and

WHEREAS we acknowledge the fact that there may be citizens of our State who, in their later years especially, have unrecognized and/or unfulfilled needs for medical care; and

WHEREAS, such persons may have sought but failed to find such care within the reasonable limits of their resources; and

WHEREAS, the physician members of the Oklahoma State Medical Association feel a sincere obligation to aid in prompt and effective efforts to provide such care and satisfy such needs without creating additional financial burdens for either those in need or the resources upon which they depend for subsistence; and

WHEREAS, we assert and reaffirm our traditional oath of service to those in need without regard for stipulated remuneration;

THEREFORE BE IT RESOLVED that we the members of the Oklahoma State Medical Association do declare our desire and intent to create, promote, support and direct a Search for Medical Needy throughout the entire state of Oklahoma. The objective of this search will be to find every person aged 60 years or older who:

1. Has a need for medical care,
2. Has sought and does desire such care, and
3. Has been unable to obtain such care for whatever reason.

BE IT FURTHER RESOLVED that the Council on Socio-Economics be directed to make a study of ways and means of accomplishing this program and report back to the House of Delegates at its next meeting.

Resolution No. 13

Introduced By: Wilkie D. Hoover, M.D., Malcom E. Phelps, M.D., Joe L. Duer, M.D., R. Q. Goodwin, M.D.

Subject: Discontinuing Scientific Portion of AMA Mid-Winter Meeting

Referred To: Miscellaneous Business Committee

WHEREAS, the Board of Trustees of the American Medical Association has requested a $20 annual increase in dues for the purpose of expanding certain activities of the Association; and

WHEREAS, such an increase should be accomplished only after all reasonable economies in AMA operations are effected; and

WHEREAS, the Mid-Winter Clinical Meeting has been operating at a deficit, due to diminishing interest and attendance at the scientific sections of the meeting; and

WHEREAS, the discontinuance of the scientific portion of the Mid-Winter Meeting would result in considerable savings to the American Medical Association;

NOW THEREFORE BE IT RESOLVED, that the Board of Trustees of the American Medical Association discontinue, as promptly as is practical, the scientific activities associated with the Mid-Winter Meeting.

Resolution No. 14 (Rejected)

Introduced By: Pottawatomie County Medical Society
Subject: Appointments to Blue Cross-Blue Shield Boards
Referred To: Insurance and Medical Service Committee

WHEREAS, the relations of the Oklahoma State Medical Association and the Blue Cross-Blue Shield have always been cordial; and

WHEREAS, the public in general is led to believe that Blue Cross-Blue Shield organizations represent the medical profession; and

WHEREAS, it is considered desirable to so continue; and

WHEREAS, the Oklahoma State Medical Association is of the opinion that it should be considered proper for the Association to exercise some degree of control of personnel on the Boards, Blue Cross-Blue Shield;

THEREFORE BE IT RESOLVED, that the Council of the Oklahoma State Medical Association shall hereafter nominate members of the Blue Cross-Blue Shield Boards when, in due course of time, the appointments to these Boards shall have expired. The Council shall nominate a certain number of candidates for each vacancy, according to their discretion. The Oklahoma State Medical Association is of the opinion it is preferable that a majority of members of each Board shall be Medical Doctors, members of the Oklahoma State Medical Association.

BE IT FURTHER RESOLVED, that failure of the Blue Cross-Blue Shield to cooperate with the terms of this resolution shall produce the effect of withdrawing the active approval and cooperation of the membership of the Oklahoma State Medical Association.

Resolution No. 15 (Rejected)

Introduced By: Kay-Noble County Medical Society
Subject: Education Program—Alcoholism
Referred To: Legislation and Public Policy Committee

WHEREAS the American Medical Association accepts alcoholism as a disease that can be arrested and that should be treated by a physician in a hospital when necessary; and

WHEREAS, a wider understanding of this disease by physicians and hospital administrators is a serious obligation which demands attention; and

WHEREAS, a Medical Hospital Committee of the Oklahoma Alcoholism Council has been formed to stimulate such understanding in Oklahoma and has initiated a specific training program for the purpose of enlightening physicians in Oklahoma regarding the disease of alcoholism and its treatment procedures;

NOW THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association approve of the voluntary committee of the Oklahoma Alcoholism Council and its objectives.

BE IT FURTHER RESOLVED that, upon such approval, the Commissioner of Health of the State of Oklahoma and the President of the Oklahoma State Medical Association be delegated to use such financial facilities and other assistance of the State Department of Health which may be possible and any other such action as may be necessary to accomplish the following objectives:

1. The establishment of an alcoholism in-patient training and treatment program within University Hospital, University Medical Center, Oklahoma City.
2. The establishment of an annual post-graduate seminar on alcoholism.

BE IT FURTHER RESOLVED that the above Resolution be presented by the delegates of the Kay-Noble County Medical Society to the House of Delegates of the Oklahoma State Medical Association, at its annual meeting on or about May 6, 1961, for approval and action by the House of Deleates.

ADOPTED, by the Kay-Noble County Medical Society, at its meeting on May 2, 1961.

Resolution No. 16

Introduced By: The Council
Subject: School of Dentistry
Referred To: Legislation and Public Policy Committee

WHEREAS, we have become aware of the increasing shortage of personnel to care for the health and welfare of the rapidly growing population of the United States; and

WHEREAS, this shortage is becoming especially acute in regard to dentists in the less populous areas of Oklahoma, and is sure to spread throughout the State because of the absence of a dental school in Oklahoma; and

WHEREAS, this increasing shortage of dentists will make our problem of caring for the health and welfare of our patients more difficult;

NOW THEREFORE BE IT RESOLVED that the Oklahoma State Medical Association favors the enact-

ment of House Bill 829 as the first step toward a School of Dentistry as a necessary protection to the general health and welfare of our future patients, the citizens of Oklahoma.

Resolution No. 17

Introduced By: General Practitioners of Oklahoma County
Subject: General Practice Residencies
Referred To: Legislation and Public Policy Committee

WHEREAS, many general practice residencies offered are inadequately organized to achieve the intended end of producing physicians qualified to do high quality general practice; and

WHEREAS, the present general practice residency is frequently poorly and subordinately integrated within and among the specialty services of the hospital; and

WHEREAS, it is the duty and obligation of each medical discipline within the accepted organization of medical practice to evaluate and direct the nature and quality of the respective training and qualifications for that discipline;

THEREFORE BE IT RESOLVED, that the Council on Medical Education in Hospitals be directed to construct another pilot two-year progressive training program taking cognizance of the demonstrated defects and discrepancies of the prior program and orienting the new program to the criteria of good general practice as determined by that group most intimately involved and most adequately knowledgeable on the subject, the American Academy of General Practice.

BE IT FURTHER RESOLVED that the Delegates of the Oklahoma State Medical Association be instructed to introduce this Resolution before the House of Delegates of the American Medical Association, at its regular meeting in June, 1961.

Resolution No. 18 (Rejected)

Introduced By: E. K. Norfleet, M.D.
Subject: Merger of the California Medical Association with the California Osteopathic Association
Referred To: Legislation and Public Policy Committee

WHEREAS, it has been brought to our attention that there is a proposal for the merger of the California Medical Association and the California Osteopathic Association; and

WHEREAS, the principles of medical ethics proscribe voluntary professional associations between doctors of medicine and cultists; and

WHEREAS, only the House of Delegates of the American Medical Association can alter policy of the American Medical Association; and

WHEREAS, in the absence of a directive from the House of Delegates of the American Medical Association to its membership, and in the absence of any alternative statement from the osteopaths themselves that they no longer adhere to their original cult theories, the Oklahoma State Medical Association must assert its opinion that all voluntary professional associations with osteopaths are unethical; and

WHEREAS, the President of the California Medical Association has asserted in a national publication that the dealings of the California Medical Association in regard to the osteopathic question with the American Medical Association are confidential but that if the American Medical Association were not in accord with the program there would be no merger; and

WHEREAS, the House of Delegates of the American Medical Association has given no indication that it favored such a merger.

THEREFORE BE IT RESOLVED, that the House of Delegates of the Oklahoma State Medical Association, in Regular Session assembled in Tulsa, Oklahoma this 7th day of May 1961 oppose the approval of any merger of the California Medical Association with the California Osteopathic Association by the American Medical Association.

Resolution No. 19

TITLE: Changes in the Constitution and By-Laws

WHEREAS, the Council Reports, as of May 7, 1961, have been duly accepted and passed by the House of Delegates which authorized permanent changes in the administrative structure and nomenclature of the Oklahoma State Medical Association; and

WHEREAS, this program has now been on a trial basis for a period of two years of successful operation; and

WHEREAS, other changes in the Council Reports have been authorized by the House of Delegates on this date.

NOW THEREFORE BE IT RESOLVED that the incoming president of the Oklahoma State Medical Association instruct the standing committee on Constitution and By-Laws to rewrite the Constitution and By-Laws in compliance with the action of the House of Delegates relative to these changes authorized by the Council Reports.

BE IT FURTHER RESOLVED that these changes be submitted to the next House of Delegates for final approval or rejection.